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VOL. CXV.—No. 3935. [JULY 5, 1918.

ARCHITECTURE IN SCOTLAND.

WE gave last week an account of the second Annual Convention of the Institute of Scottish Architects, and are glad to note that the new body gives every sign of that vigour and vitality which will make it a great force for good in the North. In the absence of Sir John J. Burnet, through illness, the chair was occupied by Mr. T. F. Maclennan, of Edinburgh, who delivered an exceedingly appropriate and well-conceived address dealing with the existing position of the profession and the measures which might be taken to achieve its objects. The average Scot does not waste his words, and Mr. Maclennan said many things which are most pertinent. He reminded his colleagues that though they might say they had achieved that unity of the profession which was as yet only talked about in England, much remained to be done, and he enforced his arguments with a very clear and able description of the immense differences existing between the classes of practitioners and also of different parts of the country, with their varying wants and customs. We think Mr. Maclennan is quite right in his estimate of the immense difficulties to be overcome before a supreme council of control for the whole profession can be formed, such as is advocated by the Architects Reorganisation Committee. The inclusion of the existing societies would be difficult, but could be arranged; the inclusion of the outside architects, who, as Mr. Maclennan says, "had shown either their own consummate selfishness or their natural aversion to the rule of majorities, would be yet more difficult, as they in many cases would object to a combination and prefer their present independence of control. For these reasons, coupled with that of the varying requirements and customs of each district, the powers of the Council would have to be restricted to matters of general policy, great latitude being allowed to local societies. The new Council, he said, was the Supreme Council of the Architects of Scotland, and the area over which it exercised jurisdiction was not too large to render its rulings effective; but even in Scotland it would be reasonable to allow the local "Chapters" to decide many questions on which they were the best authority. Mr. Maclennan is, we note, strongly of our view that the tentative proposals recently outlined as to a division of functions between the Royal Institute of British Architects and the Society of Architects is unworkable. As he put it, "he did not imply that there was anything to be ashamed of in looking after the interests of the profession; far from it, but to set up a separate society with this avowed purpose seemed to him the height of absurdity. There was no reason, for instance, why they should allow the public, and in consequence the Government, to remain under the delusion that they were not practical men, and that the only practical men were tradesmen and engineers." The greatest drawback to the profession is the incompetent architect, and they could only safeguard themselves and the public by increasing their efficiency to deal with the changing problems of the day, an object best effected by raising the educational standard.

This is sound common sense and is at the root of the whole question of Registration, which can only come if it fulfils a want, not of architects alone, but of the public. If they know that the employment of a member of the Institute will protect them, there will be an automatic tendency to abandon the employment of others; but if this point cannot be made clear and evident to their understanding, any measure advocated which will give architects special and legalised privileges will be resisted. If the architect's position becomes a strong one, he will more readily obtain outside help and official support; and much as we should like to see architects placed in a stronger position, we must recognize that the great essential is such reform as may be organized within their own ranks. Such facts should do much to dispose of the rivalries and jealousies which we sometimes see signs of, because the architect who gains a reputation for good work increases the status of his calling and makes it easier for others to establish their claims to public recognition; while the man who is inefficient and incapable drags down public confidence in the whole profession. Mr. Maclennan did not touch on the great and important question of finance and business, which has been so pertinently and strongly raised by Mr. John Murray. It would be most interesting to collect data of the building carried out in a defined district in a period of time, differentiating between that which was carried out under architectural direction from the remainder; and we believe most people would be surprised at the enormous disproportion between the two. If so, it becomes of cardinal importance to discover a *modus operandi* for securing a means of obtaining a larger field for the architect's efforts, and this cannot be done without discovering what it is the public want and are willing to pay for. Is it not for buildings suited to their purposes, which they can acquire in a completed form in one transaction?

The public estimation of the architect will grow in proportion to the realization that he is an expert in all the arts and sciences comprised in building, and in addition master of the means necessary for getting work executed. We are sure that it is the breadth and multiplicity of functions exercised by the engineering profession which gives engineers their undoubted strength and influence; and in the period of reconstruction after the war, architects should endeavour to lay plans for securing what we may term the "lost provinces" of their avocation. If in doing so it were found necessary to divide architects into classes defined by the functions they exercised and even to be represented by different bodies, it is quite possible that such apparent division would in reality represent a greater real union than that which at present exists. Thus, we on this side of the border see in the new Scottish Institute not the separation of two kingdoms, but a reasonable plan of securing in Scotland the aims of the Royal Institute of British Architects. The autonomy of districts may be a means of securing unanimity of aims, stimulated by the closer association of professional men in well defined local groups; and for this reason we shall be glad if the Scottish Institute secures the royal recognition which it seeks.

Scotland has long had a reputation for the efficiency of its education and the enterprize of its people; and in the province of architecture an unusually large number of practising architects of the first rank are of Scottish extraction. As a nation, they make their way to the front by their untiring industry and courage; and, in spite of its relative poverty compared with the richer lands south of the Tweed, Scotland in her architecture has always taken a deservedly high place in the world's records in stone. We must remember in England that customs and professional methods differ very widely, and that the wide measures of autonomy so strongly insisted on by Mr. Maclennan are no less necessary and important here; and that if we wish to secure the greater unity of the profession it must be by affording more and not less liberty to the local societies. In one word, we want a willing co-operation in spirit inspired by a liberal recognition of local claims, and not a cast-iron uniformity which, if arrived at, would soon became a dead letter. In addition, we must all recognize that we stand on the threshold of a new era in which in many things the future will differ from the past.

NOTES.

Town Amenities.

THE exigencies of war have done much to add variety and picturesqueness to our streets in several ways. We cannot but think that some of these exigencies suggest permanent innovations, such as would add to the pleasantness and amenity of the city. For instance, the red striped awning which swings out from the lower portion of the terrace wall in front of the National Gallery might surely become a permanent institution during the summer months; and also a pleasant disposition of seats and flower kiosks, the sales being possibly limited to charitable purposes. We hope the lesson will not be forgotten when we are able to take up again the broken threads of our civilization. It is perhaps not too much to hope that Professor Lethaby may some day see his tidying-up of London taken in hand—may we not even hope under his able guidance? All sorts of straightening out of ugly corners and excrescences in our streets are ready for his vigilant activities. By the way, is it not an odd thing that the authorities of St. Paul's, Covent Garden, gave up a part of the fine isolation of their church to make way for the ugly protuberance of a public urinal? Is it not a little strange that a public authority should have ventured to suggest such a thing to the church?

Private Enterprise.

A CORRESPONDENT writes us as follows: "Though the claims on behalf of private enterprise may have been exaggerated, one cannot but look forward with great apprehension to the results of government control in checking or altogether preventing it. Look where we are now in the matter of food and other commodities. The government control has sent prices up beyond all fair and reasonable limits, and if a tax of two-pence is added to anything the public are sure to have to pay three pence. Business will never thrive if this pernicious system of control is to be continued. It seems probable that after peace is declared there will be some continuance of control, but the more there is and the longer it lasts the more we shall have to pay in the end. I venture to assert that the one thing above all others of most importance after the war is to encourage and protect private enterprise to the utmost. Notwithstanding the severity and the duration of our lesson as to its value, the meaning of the word Freedom is still grievously misunderstood, and by none so much as the labouring classes. Every architect ought to carefully follow the discussion at the Institute and be prepared to take an intelligent and active part in the fight for decent housing and the freedom of the building trade from needless and vexatious interference."

An American City in Europe.

IT is stated that an American city, the population of which will amount to more than 100,000, is in process of construction in France, the greater number of the inhabitants of which will be civilians. It is to form the great ordnance centre of the American army in France and will comprise forty-eight buildings, each larger than the average New York block; while one of the great ordnance plants alone will exceed in size the whole of the arsenals of the United States put together. The new city will have its own police, fire and health departments, and several thousands of small dwellings are to be erected to house the workers. These typical national dwellings planted on an alien soil are an interesting result of the present war. We recently saw plans of one—a Belgian settlement in the north of England—composed of great groups of temporary buildings laid out in streets and squares with accommodation for every branch of communal life. We hope before the war is a thing of the past to be able to illustrate some of these very interesting building schemes.

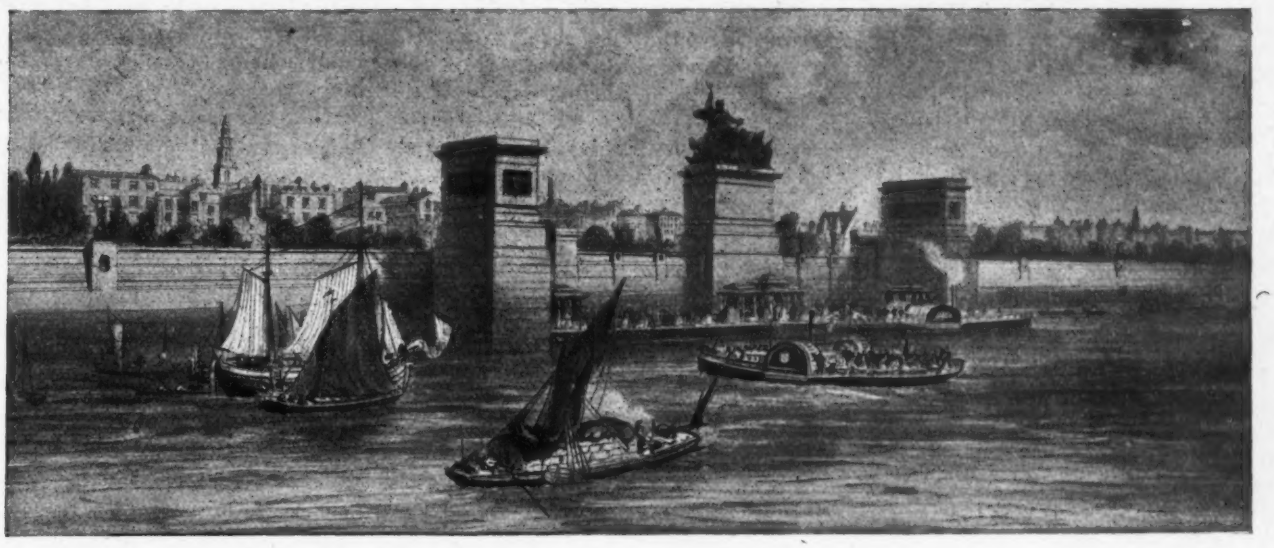
Vibration in Buildings.

ACCORDING to a French paper, a firm of agglomerate cork manufacturers recently carried out an important work of insulation in connection with a large building. Beneath the pavement and against the foundation walls a small wall of agglomerated cork was erected, impregnated with pitch to prevent decomposition, and the masonry arch on the footway leading to the building was covered with a second arch of composite cork. The composition employed had a crushing strength of 74 lbs. per square inch. The result, as might be expected, has been a considerable diminution of vibration, but such elaborate methods could not often be employed. Probably the best thing, if vibration becomes a great nuisance, is to move to another building where there is none, and in the case of new structures to build solidly and substantially at the outset. The vibration due to engines and machinery in a building can naturally be dealt with by insulating the foundations which support them.

A Presentation.

MANY of our readers will doubtless be acquainted with Mr. Arthur Ashbridge, F.R.I.B.A., who recently retired from the post of District Surveyor for St. Marylebone, which he had held for many years. Some of his friends desired to express their regard for him and their appreciation of the care and ability with which he had performed his difficult duties. A testimonial was drawn up expressing these views and was signed by over seventy members of the R.I.B.A. who have practised in his district, and also by the two members of Parliament for the borough, Sir

Suggested War Memorial Sculpture on the Thames Embankment (looking to Waterloo Bridge).



Suggested War Memorial Sculpture on the Thames Embankment (looking to the Temple Landing).

Samuel Scott, Bart., and Sir James Boyton, M.P., as an additional recognition of Mr. Ashbridge's connection with the borough. At Mr. Ashbridge's request the testimonial was presented to him quite privately on the 24th June.

District Surveyors. THOSE architects whose practice lies outside London have little conception of the difficulty and intricacy of a District surveyor's work, or the amount of knowledge of constructional matters which it involves. And there is no body of men who have been more hardly hit by the war, for under present regulations no District surveyor is entitled to outside practice, so that while his fees are almost entirely non-existent by reason of the stoppage of building work, he is at the same time unable to turn to other occupations. Those of us who have profited by the kindly help which the average District surveyor usually affords an architect may well feel sympathy for them in the position in which circumstances have placed some of the ablest. And in Mr. Ashbridge we recognise and honour one of the best of a most competent and useful body of public servants.

Labour-saving Houses. THE address delivered by Mrs. C. S. Peel, at the Women's Institute, on "The Labour-saving House from a Woman's Point of View," which we give elsewhere, is worth close attention, as some very practical and sensible suggestions are made. Unlike many of her sex, she does not assume that the builder can afford to employ expensive materials or methods, but devotes her attention to what is in reality the crux of the problem, improvement in planning. She is quite right in emphasising the importance of altering houses rather than rebuilding them, and we hope that much will be done in this direction all over London after the war. She is of the opinion that a scullery is not an essential adjunct of a house and can be eliminated; but we believe the balance of opinion is against her here, and that many architects who have persuaded their clients to incorporate kitchen and scullery have been afterwards severely criticised for so doing. But there is very little doubt that a skilful architect could show most builders and owners how to transform house property which is now out of date at a comparatively moderate expense, and we hope this will be extensively done.

The Ploughing Up of Parks. THE many protests which were made against the decision to plough up parks and open spaces all over the country in order to increase the national food supply will be remembered when the remarks are read of the Select Committee on National Expenditure, in their report just issued. The activity which was displayed in ploughing up many acres of beautiful parks and open spaces appeared to us at the time to be of doubtful value in view of all the circumstances, and now we read that the oat-growing experiments in Richmond and Bushey Parks were not a success; at Richmond Park, there was a loss of £496; and at Bushey, £11. The observation of the Committee that it would seem advisable not to continue those experiments will be heartily endorsed by most people.

Wanted, an Admirable Crichton. THE advertisement columns of a newspaper not infrequently provide amusement as well as profit to those who peruse them, but it is not often that our columns contain anything quite so entertaining as the advertisement which appears elsewhere, and to which we refer here in order to give full publicity to the wisdom shown by some of the Military Tribunals in particular cases. A man (ineligible for the Army) is wanted to take entire charge of an Agricultural Builder's Business employing at present eight men. He will not only be expected to do an ordinary day's work either as carpenter, painter, or undertaker, to conduct funerals, to repair all classes of pumps, lead or iron pipes, clean out boilers, repair agricultural implements, but he must also be prepared to look after and milk three cows before and after the day's work, attend the care of two horses, 1½ acres of garden, and keep all books, and occasional help in the garden! Here, indeed, is a chance for an Admirable Crichton, and, that it may not be neglected, the promise is made that applicant will not be asked to undertake the public work, such as Churchwarden, Parish Councillor, School Manager, or Special Constable, now being done by the advertiser, who has to find a substitute in order to join the Army! Here is food for thought—that is, if the facts are as stated—and the occasion for the inquiry: Are we really trying to win the war?

Embankment War Memorials. THE Embankment is suggested as the best place of all for the display of memorials to our fallen heroes in the war, and the illustrations we give suggest something of the effect which fine groups of statuary might produce along the frontage of the river embankment. Mr. Edward W. Hudson, A.R.I.B.A., advocates this scheme which, he says, provides a location ready to hand with no outlay for site and very little for adaptation. He says that the 150 pedestals and dies provided by the late Metropolitan Board of Works for such a purpose, should be furnished with bronzes, groups, and figures, also tablets and bas reliefs with names and incidents of the war fixed on the fronts and sides. It might be wished that a more boldly designed embankment wall had been created at first, but the placing of sculpture as suggested would do something to redeem this lack.

THE ROYAL SCOTTISH ACADEMY.

THE Royal Scottish Academy exhibition of architectural works is this year modest in point of size, but with features of special interest. Almost entirely it is of executed work, and consequently their illustration is principally by photograph. The special note is the collection of works by Scots architects practising abroad—a happy idea, if inadequately realised; the troubles of the times doubtless afford a sufficient explanation. Canada, the States, South Africa, Australia, and India are represented. From the first, Messrs. Nobbs & Hyde send McGill University, Montreal, whose engineering building (634), a large stone block, has little affinity with the traditional college type. The gables are of the Scotland Yard formula-order and arched pediment at the apex. A projecting porch, boldly rusticated, has as foil a plain wall with plain windows. A block of offices in Montreal has a far-projecting cornice made up of close-set brackets, quite in the Italian manner, while in the same city their peace centennial school of brick is rather box-like, because there is no cornice whatever—the unbroken wall face rises even above wall-head level to form a parapet; so, apparently, climate has not the potent influence in design sometimes imagined. A frame (639) is occupied with other work projected for McGill University and for a university at Alberta, these, too, shown by photographs, but of wash drawings. From Colorado, Mr. Thomas McLaren sends a stately mansion (670–640), almost institutional in aspect, after the Petit Trianon model. An Ionic order that includes two stories goes completely round the house, and its level cornice is unbroken; the interior treatment is on the same grand scale; a plan is given. Of humbler sort are (666), a house of clapboarding and shingles (or slates?), and another of smooth plastering, over brickwork presumably. (651) A New York residence of four stories and narrow frontage, in brick, by Mr. Alexander Mackintosh, who also sends a typical country house in colonial style. A frame from Messrs. Hawke and McKinlay (655) contains Law Courts at Bloemfontein and Cape Town, and Town Hall, &c., at Johannesberg. The first of these shows a rather heavy treatment of the Doric order, and no concession is apparent to any supposed climatic requirements. From Brisbane, Mr. R. S. Dods sends St. Bridgid's Church, of brick throughout, exposed, having round arches with flat soffits, devoid of any mouldings, but the buttresses are by way of Gothic, and too spiky; the pulpit and altar are in Renaissance. Mr. Dods also shows a Brisbane office block with sun shades on three floors, formed by pent-house slated roofs, supported on big stone brackets, but the treatment is altogether too heavy; surely balconies would be better. The contribution from India is of peculiar interest—some seven buildings of various types designed by Mr. E. Wittet. The most important is the Royal Museum of Western India, and this is the only example in the Indian Renaissance style. As here treated, it abundantly commends itself. A central court is expressed externally by an onion-shaped dome, and throughout the treatment is fairly rich. In the Archaeological Gallery—presently in use as a hospital—is an arcade of pointed arches, but beneath each is another arch for some purpose not quite apparent; perhaps a balcony is to run along here, but the segmental form given, this subsidiary arch seems out of style and incongruous. A police station, Government offices, a port trust, and others are all in European Renaissance style that appears quite appropriate. In the police station the window openings are not glazed, for within is a corridor on each floor, and the real front wall is recessed some half dozen feet. A gateway to a laboratory (671D) has quite a San Michele effect, all of stone smooth below, but above, the attic is in thinner courses, and different tooling gives a distinctive texture. Two almost similar views are given of a dining or ball-room in Poona Government House (671C), a nice Georgian interior, wood-panelled with cornice, and above that a coved ceiling with light Adam enrichment. Mr. Wittet's representative examples reach a high standard, and, generally, the work of the Scot abroad, as here illustrated, is of sound quality, if not specially brilliant.

The only war memorial is a scheme presented by Mr. George Washington Browne, R.S.A. (668), that utilises the arrested monument on Calton Hill. Originally purposed as a Waterloo memorial, a reproduction of the Parthenon was deemed fitting for the "modern Athens," but the project got no further than the columns of the west front, and two on each return side, and only the architrave connects them. The proposal is now to complete the order by adding frieze and level cornice, and accept the columns as forming an open screen on one side of a square plateau, having figures at the west corners and lions at the two east, and in the centre a great quadriga. The columns presently stand on a rough wall that rises a dozen feet or so above ground level; the sides of the podium thus suggested are to be clad with panels containing the names of the fallen. The space is ample for the greatest number that may be expected, and the position is accessible to all who would read them. It is an admirable conception well presented in a fine perspective by Mr. Browne. If criticism may be offered it is of the finish to the return columns. As shown, the leaving of them as they are is economical, straightforward, and respectful besides to a century-old monument widely known, but if added frieze and cornice be tolerated, some strong termination to the colonnades by pier or obelisk is permissible, and seems called for. We should greatly like to see an alternative to this part of Mr. Browne's fine conception, and with a way of ascent to the plateau. The site is unique, and the opportunity a great one.

Sir Robert Lorimer is only represented by a modest restoration of a little church, Whitekirk (659) that did not call for much structural addition: some internal stone walling renewed is of polished surface, but the communion table, also of stone, has a different tooling given it, rather affectedly archaic; on its front is a carved Agnus Dei in a rondel. The pulpit is of oak in excellent late Gothic. Mr. Dunn, the new Associate, sends additions to a Northumberland hall, and a smaller house at Kirkcaldy (678, 661), neither adequate specimens of his power, but recent works; in the letter he has made the most of what in less capable hands is often commonplace enough—three stories and an almost square plan make an intractable problem. Of prospective work, Mr. Alex N. Paterson's Gourock Town Hall Council Chamber (677) is almost the sole instance. In Scottish seventeenth century manner, two large bay windows and a vaulted plaster ceiling are the elements; the municipality is a small one, so a level floor and simple table suffice. Three large wall lunettes result from the vaulting, and one is shown filled with figure decoration—"Municipal Activities," a sketch by Mr. R. Anning Bell, A.R.A.

Mr. Morris is represented (641, 653, 672) by past competition efforts—Sheffield Town Hall and Ayr Library, and by a sheet of details of his pedestal to the Ayr Burns statue. Nicely modelled bronze pins for votive wreaths are part of the scheme, and very necessary for monuments that are on occasion so bedecked. The considerable extension to Glasgow Municipal Buildings (663) by Messrs. Watson and Salmond presents a large free-standing Ionic order on all three sides, but set between corner pavilions, and the effect is very large and dignified. Greater window area than the old building had was a condition imposed on the new, and this may in part explain the breakaway from the character and scale of Mr. Young's design; all the same a little more concession might have been made to the scheme in possession. Connecting bridges over an intervening street are interesting features; an enlarged coloured view of one of these is given. In much the same character of what is now accepted as a good convention for municipal architecture is Mr. Ed. Cooper's Marylebone Town Hall (664), shown by photographs (one is, unfortunately, taken from too near a point of view); and Lincoln Public Library (657) by Mr. Reginald Blomfield—both are dignified and restrained. Hamilton Municipal Buildings (675–678) has much in common with the foregoing, but the order is less in evidence. The architects, Messrs. Cullen, Lochhead and Brown, show in the same frame and from the same town a masonic lodge and a police station, and others; treated in the Scottish Renaissance, the buildings are of the moderate size that suits the style—very big blocks are unmanageable. By the same architects is a house rough-cast; some of its gables have stone skews, others finish with the slates flushing the wall—a modern vogue, but rather cheap in effect.

Of large city blocks it is a pleasure to see such as Australia House, (652) by Mr. Marshall Mackenzie, R.S.A., very well known to most architects by illustration. Mr. Frank Verity's flats in Park-lane and Mr. Joass's Royal Insurance Office, Piccadilly (638), are well and variously presented in perspective and geometrical elevation, in colour and in monochrome. Something attracts in the very unexpectedness of the last, where the middle zone of a façade already riddled with windows has its remaining solids further reduced by niches! First principles are denied, but the effect is rather taking. By the same hand, Holy Trinity Church (655): an impressive interior of lofty wall carried into barrel vault and innocent of cornice or moulding, the bareness only relieved by spotlike painted figures and panels; very restrained indeed, but hardly satisfying. The bases of the walls, unhappily, are cut away by square-headed openings to aisles—a beautiful water-colour.

Ecclesiastical architecture is this year noticeably absent. The only other examples are Titwood Church, Glasgow, by Messrs. Clifford and Lunan (667), in the modern phase of Gothic, and owing its external effect to gables rather than a spire; within is a wood chancel screen, rather uncommon in Presbyterian usage, and stone walling given a tooling curiously like a well-known metal lathing. The other instance is a pleasing small Methodist church at Hamilton, by Messrs. Cullen, Lochhead and Brown in the Romanesque manner. There is old world charm about Mr. Baillie Scott's late Tudor house (650) of many gables, built of stone in narrow courses, and roofing of stone slabs. Within are low ceilings with deep wood beams, but why in section are their sides tapered in the form devoted to modelled plaster beams? In another house (658) are wood ceiling-beams, but flat and with moulding, only it is wavy moulding, so they are apparently old timber re-used. Mr. A. N. Prentice's Chelwood Manor (654) in the half-timber style—now rather out of fashion—is an excellent example of the type and admirably drawn; in another manner is his house in the Cotswolds (635), with steeply pitched stone gables, shown in a good water colour. A burial place (660) very happily placed between two fine old trees, composed of an open screen on three sides of the grave and having, well in front of the fourth side, a tall crucifix, is Mr. A. N. Paterson's other contribution. Sir Edwin L. Lutyen's British School at Rome (676) is a cheering sight for students, and the design is commendably free from aggressive originality. The Entrance Hall and Manager's Room of a rubber company are promising studies by Mr. Fred Eo. Blanc, who takes after his father.

Only one example of decoration is given (682): a large staircase on orthodox lines, drawn in perspective, by Sergeant Geo. Reid; but the source of light is not very well indicated and the colour scheme is unpleasing. The only architectural drawing pure and simple is a sheet of pencil jottings of Edinburgh by the late Lieut. Sanderson. There remains only to be noticed half-a-dozen very remarkable colour studies by Mr. Wm. Gibbs, of jewelled crozier, enamel bowl, mosque lamp, Chinese porcelain, &c., rendered with convincing fidelity.

Sir George Frampton, R.A., has been elected Master of the Merchant Taylors' Company.

THE VIBRATION OF CHIMNEYS.

BY CHARLES DAVISON, Sc.D., F.G.S.

THE instruments devised for the measurement of earthquake motion have recently been employed in several investigations of great practical interest. The latest of these, for which we are indebted to Professor F. Omori, the well-known Japanese seismologist, deals with the vibrations of chimneys made of reinforced concrete. His experiments were carried out for the most part during the winter of 1916–17; the results were first described in a Japanese report, which now appears in English in the last Bulletin of the Imperial Earthquake Investigation Committee (Vol. 9, 1918, pp. 1–29).

The most interesting experiments are those made on the great chimney recently erected by the Kuhara Mining Company at Saganoseki in Kyushu, the southern island of Japan. This chimney is the tallest in the world, and its main shaft rises to a height of 550 ft. Its foundation is a mass of reinforced concrete, 17 ft. thick and 95 ft. in diameter, and weighing 4,714 tons. The main shaft of the chimney is tapering in form, its outer diameter being 42 ft. 8 in. at the base and 27 ft. 5 in. at the top. The thickness of the wall is 29½ in. at the base and 7 in. at the top. The steel reinforcing rods consist of corrugated Johnson bars embedded in the concrete at the depth of 3 in. from the outer surface. The weight of the main shaft is 4,852 tons. The total weight of the chimney is thus 9,566 tons, of which 427 tons are steel and 9,139 tons concrete. The height of the centre of gravity of the main shaft above the ground is 194.2 ft., or about two-fifths of the height of the chimney.

The chimney is built on a promontory of Palæozoic schistose rock in a district in which violent earthquakes are rare. But, even if they were to attain considerable strength in the neighbourhood, the fact that the chimney is built on hard rock is favourable to its stability, for the strength of an earthquake shock is always less on such a foundation than on one of soft, earthy ground. The top and base of the chimney are respectively about 1,000 and 450 ft. above the sea level; and, from the measurements that he was able to make, Professor Omori concludes that the velocity of the wind during storms will usually be twice as great at the top as at the base.

Begun on April 16, 1916, the chimney was finished on December 20 of the same year. Two days later, before the internal scaffolding was taken down, Professor Omori's experiments began and lasted for five days, until December 26. The instruments used were two portable horizontal vibration-recorders which were fixed on top of the chimney wall. The motion was registered mechanically on paper; one recorder, used when the weather was calm, magnified the movements from two to thirty times; the other, used in rough weather, showed the actual motion reduced by one-half.

As only five days were allowed for the experiments, it was fortunate that during that time the wind varied greatly in strength. On the first day, at the chimney top, it attained the force of a strong gale, the velocity being 54 miles an hour; on the last day, it reached the strength of a hurricane, with a velocity of 78 miles an hour. On the remaining days there was practically no wind at the base; at the top, the velocity never exceeded 16 miles an hour.

So long as the velocity remained below 12 miles an hour, the vibrations of the chimney top were quite insignificant, the total range of motion being well under $\frac{1}{25}$th of an inch. The range, however, increased very rapidly with the force of the wind. On the first day, when the velocity was 54 miles an hour, the top made well-pronounced oscillations, each about an inch in range and lasting 2½ seconds. The sensation was described as like that felt in a shaky bogie railway carriage. And on the last day, when the wind attained hurricane force, the greatest range amounted to 7.7 in. As these oscillations were executed in 2.55 seconds, it follows that the maximum acceleration during the movement was 22½ in. per second per second, which exceeds that of a semi-destructive earthquake shock.

Professor Omori notices some interesting points about these oscillations. First, the period of the oscillations was practically independent of the velocity of the wind within the limits experienced. The highest measured was 2.58 seconds, and the lowest 2.52 seconds. It would seem, then, that the motion was well within the elastic limit of the structure. Secondly, it is remarkable that the greatest movement took place, not in the direction of the wind, but in that at right angles to it. On the last day, the range was .8 in. with the wind and 7.7 in. at right angles. Professor Omori attributes this difference to the bending of the column under the pressure of the hurricane, so that it was difficult for the chimney to oscillate against the wind.

During the short interval of the experiments, the effects of earthquakes on the structure could not be tested. The rocky foundation and the long period of oscillation will no doubt render the chimney fairly safe from damage, and Professor Omori's conclusion is probably correct that in that part of the country the effect of wind pressure on a tall chimney is more important than that of an earthquake shock. Nevertheless, it would be wise to attend to his warning as regards the construction of tall chimneys which have a longer period of vibration than earthquake vibrations. In such chimneys, the part which is seismically weakest is not at the base but at about two-thirds of the height. Professor Omori therefore recommends that the chimneys should be designed so that the centre of gravity of the whole should be at one-quarter of the total height, and that of the upper half also at one-quarter of its height, instead of midway; the result of the latter and usual arrangement being to render the chimney weakest in the very part which can least effectively withstand the strain of a sudden shock.

CORRESPONDENCE.

The Pitfalls of Arbitration.

SIR,—Mr. W. H. Hope's letter published in the *Builder* under the above heading on the 28th September last, has received the attention of the Council of the R.I.B.A. with a view to investigating the allegations which were made therein. A letter on behalf of the Council was addressed to Mr. Hope, dated 17th December, 1917, to which he replied under date 4th January, 1918. A copy of each of these letters is appended, in the hope that you will publish them in the *Builder*, together with this letter.

Mr. Hope having declined to furnish the required information in substantiation of the charges made by him, the Council are unable to pursue their enquiry into the matter. Nor does it appear necessary to do so, the Council being of opinion, after perusal of Mr. Hope's letter of the 4th January, that the value of the statements contained in his first letter may safely be left to the judgment of your readers.

I am to add that the Council have been unable to discover any foundation for the allegations and charges made by Mr. Hope in the case of arbitrators appointed by Presidents of the R.I.B.A.

G. NORTHOVER.
For the Secretary, R.I.B.A.

[*Correspondence referred to in above letter.*]
17th December, 1917.

W. H. HOPE, ESQ.,
Northern Counties Federation of B.T.E.,
Sunderland.

DEAR SIR,—The attention of the President and Council of the Royal Institute of British Architects has been called to your letter in the *Builder* of the 28th September last, on the subject entitled "Pitfalls of Arbitration." The matter has been referred to the Practice Standing Committee of the Royal Institute, with instructions to examine and report to the Council. With this object I am directed to ask if you will be so good as to furnish my Committee with full particulars of the cases which you specifically mention, also of the other cases to which you refer incidentally.

Yours truly,
PERCIVAL M. FRASER.
Hon. Secretary, Practice Standing Committee.

4th January, 1918.

DEAR SIR,—I am obliged by your letter of the 17th ult., only to hand on the 31st of that month, which stood over until after the New Year's holiday. I am extremely gratified to learn that the subject matter of my recent letter to the *Builder* is engaging the attention of your Association.

As at present advised I do not think that I should be justified in making the disclosures asked for in your letter. You will, no doubt, have observed that what I was dealing with in my communication to the *Builder* was a broad question of principle, and the illustrations which I gave were intended as examples of what can and does occur in practice. I feel that for several reasons I should not be justified in nailing to the pillory individuals whose errors were occasioned rather by deficiency in the judicial quality than any moral in irection.

If there is any way in which I can assist you in formulating your scheme to revise the method of selecting arbitrators under the approved National Form, I shall be only too pleased to do so, and I feel sure that the National Federation of Building Trade Employers will welcome any invitation to co-operate with your Association in bringing about this much desired improvement.

Yours faithfully,
P. M. Fraser, Esq. W. H. HOPE.

Art and the War.

SIR,—There is an apparently inexhaustible supply of "official artists" of the war, and exhibition follows exhibition. We have been given all sorts of impressions of the work on the different fronts, and a whole gallery of military portraits. We have had, too, the simple record of men and things as seen by men who can draw and know how to paint, but there is a danger arising of the excellent work that has been done being outclassed by experiments in emotion of artists who may know how to paint and how to draw, but who are rather creating the impression that the war is being made the occasion for an ultra-modern-art propaganda.

Have we shown wisdom in accepting without demur much that has been presented to us as the "official art" of the war? Are we in fact securing, while we can, the pictorial record of the war we shall one day hope we possess? A suspicion is indeed growing that the public have been imposed upon very cleverly, and to a remarkable degree, by a group of artists and writers, under the guise of authority—an imposition which in some cases has degenerated into what can only be explained as artistic impertinence. The critics would seem to be encouraging this movement, and art tendencies that were good-humouredly tolerated before the war have now, at a world's crisis, been definitely set up as a criterion of what art has to achieve, of what "official artists" are to give us. We are in truth sacrificing normal genius to the mere exploitation of new ideas which may lead to irrecoverable artistic loss.

In concentrating on this and that phase of "artistic emotion," the official artists have one and all signally failed in expressing what has been lost in the cataclysm. They seem to have left that to photography. But there are facts to insist upon which photography cannot insist on; there is work to do which only an artist can do. In particular there is a whole field to be covered which calls for an architectural knowledge and insight, combined with an artist's genius, which the ultra-moderns have not yet shown themselves to possess.

We have one artist who is supreme in this sphere, as the Architectural Room at the Royal Academy has for the past 10 years or so borne eloquent testimony to. This artist's work proves him to be eminently equipped for depicting a definite aspect of the changes wrought by the war, and it is to be regretted that the offer of his services has not been accepted by the particular body that decides these questions. The public would welcome any opportunity for the expression of a sincerity of aim that would counteract tendencies of the moment which are, whatever their integrity, indisputably beyond it.

MAX JUDGE.

GENERAL NEWS.

Professional Announcement.

Mr. Charles J. Blomfield, F.R.I.B.A., 125, Park Road, N.W. 8, has been appointed Consulting Architect to the Dean and Chapter of Southwark Cathedral.

War Memorials.

When the proposal to establish a war memorial in Edinburgh Castle was made public, and the Secretary for Scotland announced his intention to form a Committee to deal with the matter, he was asked by the Council of the Institute of Scottish Architects to appoint one or more members of the Institute to that Committee. The annual report of the Institute states there is reason to believe the request will be granted.

London Sewage.

Mr. Edmund Kimber has been requested by the Main Drainage Committee of the London County Council to prepare a scheme for dealing profitably with the whole of the sewage of London, as has been done in Paris. It is calculated that a ton of the dried sludge will yield 13 gallons of crude oil, 3 gallons of light spirit, 45 lbs. of sulphate of ammonia, and 13 cwts. of fertiliser. It is estimated these would realize £583,395 per annum for an initial expenditure of less than £200,000.

After-War Housing Schemes.

The Sanitary Committee of Manchester report that, after careful consideration of the financial proposals for after-war housing schemes, submitted by the Local Government Board in their circular letter of March 18 last, they are of opinion that the financial assistance offered by the Government is inadequate, and ought to be increased so as to cover the whole difference between pre-war and post-war cost of building, and that the periods named by the Board for beginning and completing the work should be materially extended.

Melrose Abbey.

The Duke of Buccleuch has presented Melrose Abbey to the nation, its custody being undertaken by the Commissioners of Works. In a letter, making the gift, his Grace writes: "My predecessors have devoted constant attention to the preservation of the fabric and amenities of the abbey, and their efforts have been successful in preserving the remains of this beautiful example of ecclesiastical architecture. Now, however, that the Commissioners of Works are possessed of special powers for the preservation of ancient monuments and buildings, I have decided to offer to convey my rights in the abbey to them, so that it may belong to the nation instead of to a private individual."

The Duc De Bourbon Tapestry.

A fine series of panels of tapestry, old English furniture and objects of art attracted a large gathering of dealers, collectors and others to Christie's a few days ago, when many high prices were realised, the total of the day probably exceeding £40,000. The most important lot was a set of four panels of early 18th-century Gobelins tapestry, of the series known as the "Arabesque Months," and representing those of May, June, August, and September; in the upper border of each panel are introduced the arms of the Duc de Bourbon. Bidding was started at 5,000 guineas, and it was secured at 15,000 guineas. The same property included a panel of Mortlake tapestry, with landscape, 17th century—530 guineas; and another with peasant figures, and of the same period—720 guineas.

Temperature Conversion Table.

The Cambridge Scientific Instrument Company, Ltd., have sent us a copy of their Temperature Conversion Table, which is produced on a neatly glazed card suitable for hanging on a wall. It consists of a spiral, on one side of which the Fahrenheit scale is printed in black, while the other gives the Centigrade notation in red. The scale reads from absolute zero to 2,000 centigrade. Round the chart are various tables giving data as to melting and boiling points of various elements; temperatures of saturated steam at various pressures; specific heats at normal temperatures; and other useful data, including formulæ for the conversion of the Fahrenheit, Centigrade and Réaumur scales. A copy of the chart will be sent to anyone, on receipt of 6d., by the Cambridge Scientific Instrument Co., Ltd., of Cambridge, England.

Housing in Greater London.

At the last meeting of the executive committee of the London Labour Party, the question of London housing and planning was considered, and the following resolution was unanimously adopted:—"That the executive committee of the London Labour Party calls the attention of the President of the Local Government Board to the fact that, despite the party's repeated requests since January, 1917, the London County Council has declined to take any positive action with respect to London housing and town planning; in these circumstances, the committee earnestly requests the President immediately to call a conference of housing authorities in Greater London, as suggested to him by the party deputation on March 21, 1916, for the purpose of making businesslike arrangements for plans to be prepared for adoption immediately upon the conclusion of the war.

Capital and Labour.

The Industrial Reconstruction Council has issued a manifesto stating that co-operation between Capital and Labour is undoubtedly the most urgent industrial question of the day, and suggesting that the Government should adopt the uniform practice in all industrial and commercial matters of consulting only joint bodies representative of both employers and workpeople's organisations. "In this very simple way," say the signatories, "the Government has the power to bring about an active co-operation between Labour and Capital. The opportunity for the course which we suggest will pass with the war, as the relations between the Government and trade are then expected to become less intimate. We therefore press for the immediate acceptance of the following principle:—"That any commercial or industrial matter ought not to interest the Government unless it interests both Labour and Capital," and the consequent adoption of the following policy:—'That the Government will undertake to obtain, and wherever possible accept, advice on these matters from bodies equally representative of both Labour and Capital.'"

"Washington Inn."

The "Washington Inn," which has been built for the American Y.M.C.A. as a hostel for officers of the American Army and Navy, was opened on the 24th ult. at St. James'-square, London, S.W. Mr. S. Phillips Dales, M.S.A., was the architect, and he has planned the huts in accordance with the Y.M.C.A.'s agreement with the inhabitants of the Square, that no trees should be cut down or harmed in any way. Mr. John McManus was the contractor. "Washington Inn" can accommodate about 110 officers with sleeping quarters. Although erected primarily for officers of the American Expeditionary Force, all allied officers are welcome. It has been built round the statue of William III, and in general plan consists of a series of wings radiating from the statue in the centre like the spokes of a wheel, the wings being connected by a covered way, which runs in a circle around the grass plot upon which the statue stands. The entrance is on the eastern side of the square. The corridors are all tiled, and the walls painted white and green. The hostel is built in brick, ironwork, tiles, and wood. It has cost, with its equipment, about £10,000. There are large offices and retiring rooms for the administrative staff, and for the many ladies who are voluntarily giving their services as attendants.

BOOKS.

London and its Environs. Edited by FINDLAY MUIRHEAD, M.A. (London: Macmillan & Co., Ltd. 7s. 6d. net).

WE are glad to call attention to this new Guide to London—the first, presumably, of the "Blue Guides" new international series—as it has been prepared on an admirable plan and should easily take the place of the best hand Guides to London hitherto published. The volume, which does not claim to contain an exhaustive description of London, has been compiled by those familiar with the subjects dealt with and with a special eye to the requirements of English-speaking travellers, and edited with full appreciation of the conditions arising from the war. Not only will it be of use for passing reference on the spot, but the essays by well-known writers on such subjects as history, art, archaeology, architecture, are reliable contributions to our knowledge of the subjects treated, while its scope and character will be inferred from the fact that it contains thirty maps and plans, and that in the general preparation of the book and in the writing of a great part of it the editor has been aided by Dr. James F. Muirhead, his colleague before the war in the English editorship of Baedeker's handbooks.

The Guide aims at presenting a convenient, brief, and clear description of the chief points of interest in one of the great cities of the world, prefaced by a summary of practical information likely to be useful to the visitor, whether from other parts of the kingdom, from overseas, or from elsewhere abroad. It will probably also serve as a convenient handbook for the Londoner, not only reminding him of what lies at his door, but for practical purposes obviating the consultation of many books of reference.

The special essays include one by Professor W. R. Lethaby on "London Architecture," which is admirably written and suitably finds place in such a Guide. "Architecture," he says, "should not be a mystery made unreal and remote by mere professional talk of styles and orders and proportion. The styles have made themselves, the critics make only the names. Architecture should be concerned with serious needs and their reasonable satisfaction, with skill in workmanship, and with the quality of the effort and thought which are evoked. All men should be able to judge of these; the measure in which architecture has come to be thought of as a professional routine is the measure of its failure, for the interest of all is necessary for the production of a sane manner of building." It is well to have this said in such a Guide, the appearance of which we heartily welcome.

Mensuration made Easy, or the Decimal System for the Million. By Charles Hoare. (London: Effingham Wilson. 1s. net.)

THIS little work appears appropriately now in view of the increasing interest shown in the decimal system and the fact that a Decimal Coinage Bill is now before the House of Lords. The book has been compiled on admirable lines, each little section being so clearly and simply dealt with that anyone of average intelligence will be able to follow the author from decimals to mensuration and miscellaneous rules and tables. The work has been written expressly for the artizan classes, but it deserves, and will no doubt secure, a much wider circulation than is implied by that intention.

Books Received.

TABLES OF SAFE LOADS ON STEEL PILLARS. By Ewart S. Andrews, B.Sc. (Eng.) and W. Cyril Cocking, M.C.I. (London: James Selwyn & Co., Ltd.; 6s. net.)

SOUTH SLAV MONUMENTS: I, SERBIAN ORTHODOX CHURCH. Edited by Michael J. Parpin, Ph.D., Hon. D.Sc., LL.D., with an Introduction by Sir Thomas Graham Jackson, Bart., R.A. London: John Murray. Price £2 2s., cloth, £3 3s.

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ILLUSTRATIONS.

The Royal Scottish Academy Exhibition.

We give this week some of the exhibits from the Architectural Room of the Royal Scottish Academy Exhibition, an article on which will be found on p. 4.

THE LABOUR-SAVING HOUSE FROM A WOMAN'S POINT OF VIEW.*

We have come to that stage in our development when people resent being required to undertake unnecessary labour. Educated, intelligent people naturally dislike having to do hard, dirty work which is quite unnecessary. If we would take the trouble to use our brains and the mechanical appliances which were available before the war and will be available again after, I do not think it is an exaggeration to say that quite a third, if not half, of the distasteful dirty work which we now perform in our houses might be eliminated, provided those houses were built, planned and furnished in an intelligent fashion.

You all know that there is a servant problem. Personally, I think we are going to suffer from a greater shortage of domestic labour in the future than we are suffering from even at present. When I say this, I am assured that servants will have to go back to service after the war. I am not altogether convinced that that is so; but even if economic conditions drive them back into service for a few years, do you want angry, resentful people to come and work in your houses simply because they cannot get anything else to do? Surely that would be a most unpleasant state of affairs; therefore, let us combine and make up our minds how we are to lighten the work of our houses, so that we may make domestic labour more attractive and thus benefit the servant or the woman who is her own servant. Let us do our thinking now, and have our plans ready. It is out of the question to make many changes at the moment. To obtain a gas stove or an electric cooker is all but impossible. It is difficult even to induce a man to put a new washer on the bathroom tap! It is necessary to obtain a permit in order to paint a house, and the amount which may be spent on building is limited, so that it is evident we cannot do very much until after the war. Meanwhile, here are some suggestions which I should like you to consider carefully, because it is apparent that, as our towns cannot be rebuilt, we shall have to go on living in the houses which exist, and find out methods by which they may be made habitable according to modern ideas.

Let us deal with London for the moment—though, of course, the same conditions exist elsewhere. I want you to make a mental picture of a house in a well-known road in Pimlico, for example. Steep stairs, deep, dark basement, one bathroom, coal range and coal fires, no service lift. You cannot keep such houses clean and live in them in the way that people who can afford to pay their rents expect to live, without two and a half servants, and if you have children three or possibly four. After the war are most of us going to be able to afford to live in houses which necessitate the keeping of several servants? Wages are mounting steadily; I doubt if they will descend, and personally I do not wish them to do so.

The cost of building has risen greatly since the war, and must remain high for some time, but even so I cannot but think that it would pay to alter these houses.

The first thing which must be done is to do away with the basement. I said this to an architect the other day, and he said "Rats!" No, he was not gibing at me. He really did mean rats—in those basements—running about. Still, I think we might get over the rat difficulty and shut up the basements, using them only as box or store-rooms.

The house proper should begin on the first floor, which consists of a front dining-room, a back dining-room, and a smoking-room. I would make the front room the dining-room, with a buttery hatch opening into the back dining-room, which should become the kitchen, while the smoking room would be a pantry. The hot water system might be worked by gas or by a furnace, burning coke, rubbish and a little coal, and a second bathroom should be built so that there need not be washstands in the bedrooms. This does away with a considerable amount of housemaid's work. If possible I would have radiators on the landings, and possibly in some of the rooms. Gas fires are so well ventilated nowadays, and can be made so attractive in appearance, that there is no objection, as far as I can see, to their use.

Now, by doing away with all the basement cleaning, running up and down stairs to open the front door, and the work of carrying heavy trays up and down stairs, which is so exhausting, by eliminating grate cleaning, except in one room, coal carrying and the cleaning of fire irons, fenders and coal-boxes, by the saving of dust which fires cause, by doing away with wash-stand work, by substituting an electric or gas cooker for the kitchen range, and thereby saving you the objectionable task of cleaning the flues, and in addition by not overcrowding the house with furniture and littering it with senseless ornaments, you will certainly have lessened the work of that house by a third to a half, thereby making it possible to reduce the bill for wages and fuel and the upkeep bill.

Here is another instance of what may be done with an existing house of the ten-roomed order, built eighty or one hundred years ago. If the area is so narrow that sufficient air and light cannot penetrate to the rooms, have nothing to do with it, if you can possibly avoid it, unless, of course, you require so few rooms that you can shut up the basement, as already suggested. I am presuming in this case, however, that the house is too small unless the basement rooms are employed. The large front room may be used as a pantry, servants' sitting room, and linen room combined. The small back room, with water heater and gas or electric cooker, if carefully furnished, will make an excellent kitchen and scullery combined. In such a house there is probably no larder, and this must be built, for it is of vital importance to health that food should be kept in a light, cool and well-ventilated larder. There is a garden of some kind at the back of this house, which could be made attractive, and I have found it possible to extend the area so that the kitchen is neither dark nor airless. When the servants can have a pleasant room in which to sit, there is no need to have a scullery as well as a kitchen; it merely makes one more place to clean. There should be a service lift, and this could be arranged so that it is fed from the kitchen and pantry, and that it could be opened both into the dining-room and smoking-room, which in such houses are generally connected by double doors. A cloak-room may be arranged on the ground floor, and if two bathrooms with fitted basins are built out at the back, one over the other, the house, with the addition of telephone bells and gas fires, becomes quite a convenient, labour-saving dwelling. If a radiator can be placed in the front hall and on the first landing, the passage and stairs will always be warm, which greatly lessens the amount of heating needed in the rooms. Thus, I find from personal experience that at the cost of fuel for one very moderate-sized furnace, the water for two bathrooms, three hand basins, three sinks and one large radiator in the hall can be heated. The furnace is so arranged that dishes which need long and gentle cooking are placed upon this, and it makes a considerable saving in the gas or electricity bill.

Very much needs to be done, not only in the homes of the well-to-do and more or less well-to-do, but also in the homes of the poor, many of which are a disgrace to the nation. Only the other day, I went to pay a visit at a house in which lives a woman who has brought up ten children. From the door a steep little flight of stairs leads to the basement living-room. Close to the pavement is a little grating which lights that living-room. If, and only if, the door of the room, which opens into a dank little yard, is kept open the room is fairly light and ventilated to some degree. The window cannot be opened because the dust and dirt from the pavement would be blown in and the children would throw stones and dirt into the room. In this house were two bedrooms—two bedrooms for father, mother and ten children! That woman was not dirty, she did her very best to keep the house clean, and it swarmed with vermin in spite of her efforts.

How can people exist decently in such conditions as these? We have to solve the problem of housing the working classes healthily and cheaply, and to do this not only must new houses be built, but the existing ones must be altered, especially those which were originally built for middle-class residents, and are now inhabited by several working-class families. Women are now giving much time and thought to the housing question; it is for them to decide what it is that they want, then the architect and the builder must discover the best and cheapest methods of providing what is wanted, thus rendering the houses of the people homes and not dwelling places, which by their evil construction and senseless arrangement eat up the health and energies of those who inhabit them.

* Extracts from an address by Mrs. C. S. Peel to the Women's Institute.

Planning of Houses for the Working Classes.

Mr. Robert Munro, the Secretary for Scotland as President of the Local Government Board for Scotland, has appointed a Women's Committee with the following terms of reference:—

(*a*) To visit various houses recently erected in Scotland by the Local Government Board for Scotland on behalf of the Minister of Munitions and the Admiralty, the houses provided by the Scottish National Housing Company at Rosyth; and any other housing schemes selected after consultation with the Board, and to report their views from the housewife's standpoint on the planning and arrangements of the houses.

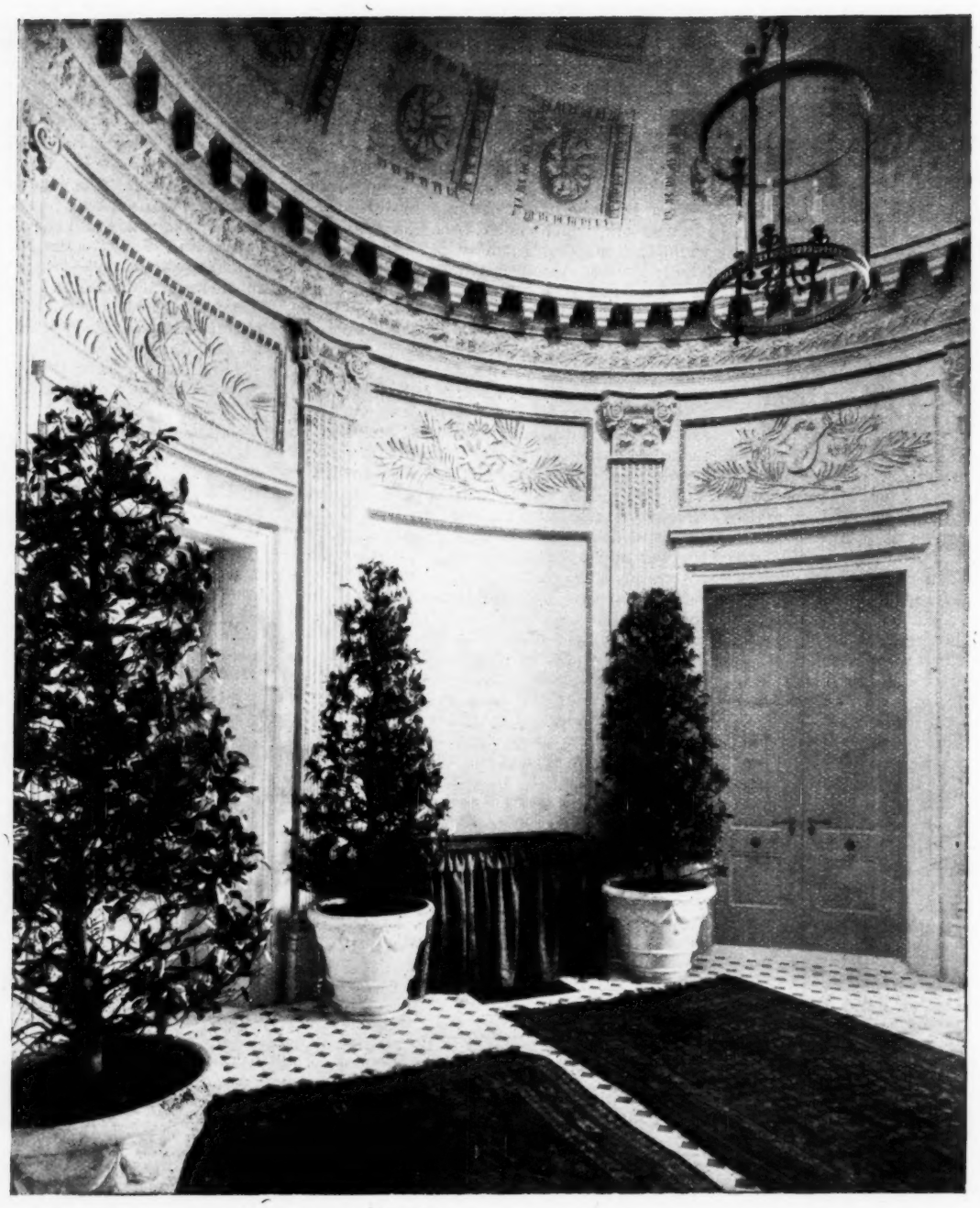
(*b*) To submit general recommendations with regard to the planning and arrangements of houses for the working classes.

(*c*) To report on any other matter referred to them by the Board.

Any reports and communications on the subject of the Committee's remit should be addressed to Miss E. M. M Michael, Secretary of the Committee, Local Government Board, 125, George-street, Edinburgh.

Tonbridge School War Memorial.

A general meeting to decide the form of the Tonbridge School War Memorial has been held at Skinners' Hall, Dowgate-hill, E.C. The Advisory Committee have had the help of Sir George Frampton, R.A., and Mr. Herbert Baker, F.R.I.B.A. It is proposed that the memorial, in addition to the provision, where necessary, of education at Tonbridge for the sons of fallen Old Tonbridgians and masters, shall include the addition to the west end of the chapel of a cloister containing the roll of honour of the dead and a memorial cross outside the chapel in honour of all who have served. Any surplus would be applied in the erection of a hostel for Old Tonbridgians in connection with the school mission on school property at Holy Cross, St. Pancras.



ROYAL SCOTTISH ACADEMY EXHIBITION. *Photo Drummond, Young & Watson.*

CLAREMONT, BROADMOOR, COLO., U.S.A.

MR. THOMAS MCLAREN, ARCHITECT.

ROYAL SCOTTISH ACADEMY EXHIBITION. *Photo: Drummond, Young & Watson.*

LAW COURTS, BLOEMFONTEIN.
MESSRS. HAWKE & MCKINLAY, ARCHITECTS.

ROYAL SCOTTISH ACADEMY EXHIBITION. *Photo: Drummond, Young & Watson.*

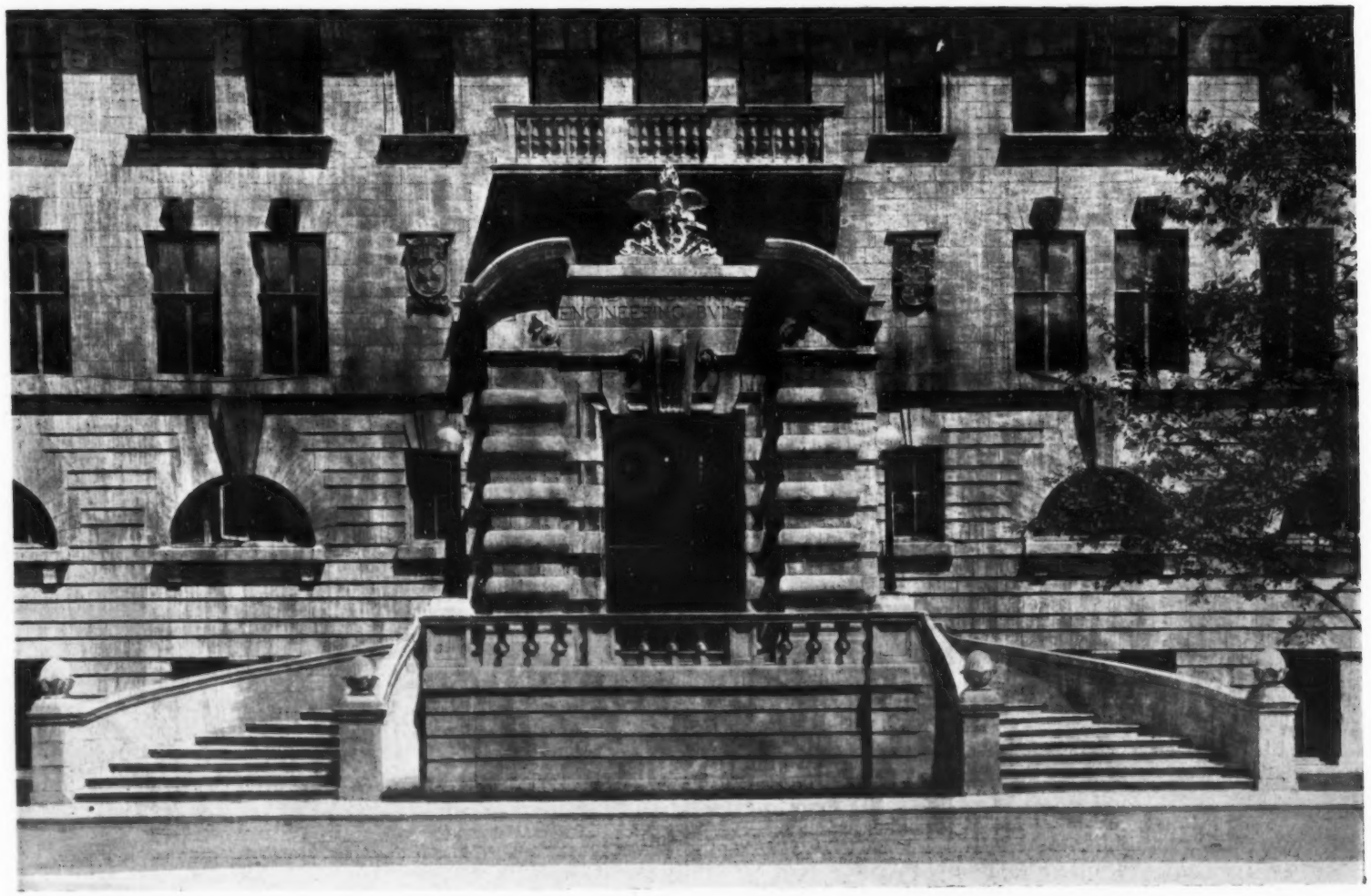
CLAREMONT, BROADMOOR, COLO., U.S.A.
MR. THOMAS MCLAREN, ARCHITECT.

ROYAL SCOTTISH ACADEMY EXHIBITION.

Photo: Drummond, Young & Watson.

ENGINEERING BUILDING, M'GILL UNIVERSITY, MONTREAL.
MR. PERCY E. NOBBS, ARCHITECT.

THE BUILDER, JULY 5, 1918.



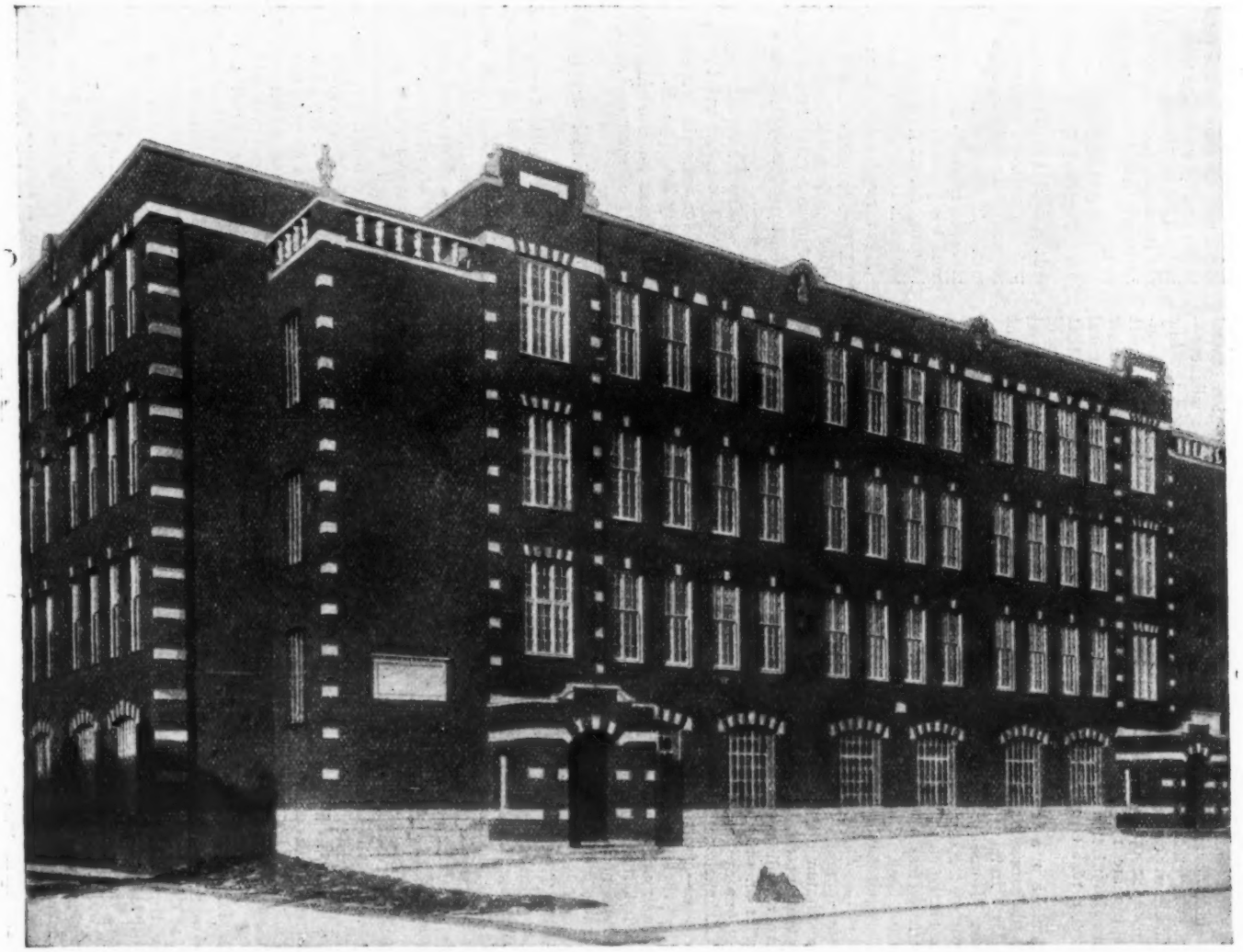
ROYAL SCOTTISH ACADEMY EXHIBITION.

Photo: Drummond, Young & Watson

SCHOOL OF ENGINEERING, M'GILL UNIVERSITY, MONTREAL: MAIN ENTRANCE.
MR. PERCY E. NOBBS, ARCHITECT.

ROYAL SCOTTISH ACADEMY EXHIBITION. *Photo: Drummond, Young & Watson*

BIRKS BUILDING, MONTREAL.
MESSRS. NOBBS & HYDE, ARCHITECTS.



ROYAL SCOTTISH ACADEMY EXHIBITION. [*Photo: Drummond, Young & Watson.*

PEACE CENTENNIAL SCHOOL, MONTREAL.

MESSRS. NOBBS & HYDE, ARCHITECTS.

FUEL ECONOMY IN COOKING APPARATUS.*

(*Continued from June 14, page 359.*)

Economy Due to Large Plant.

Closely connected with this problem is the third principle to which close attention should be directed, namely, that the larger the plant the greater is the efficiency possible of attainment. In almost all, but not quite all, practical problems, it is found that if a very small apparatus can be worked at a certain low efficiency, say 20 per cent., then a large plant of the same kind can perhaps be worked at, say, 75 per cent. efficiency. The difference is often even greater than this, and the principle holds over a very wide range, not only of engineering or industrial operations, but also of financial, economic, educational and others. Now, the operations carried out in a private house are not only almost microscopic in size, but also intermittent, both of which features render real economy impossible.

One of the principal difficulties in a private establishment is that the demands on the cooking apparatus vary greatly. In many cases the household may consist of one or two individuals for the greater part of the day. At night the business people come home and the requirements are at once increased 200 per cent. or 300 per cent. At Christmas time, or at the time of a party, the normal requirements may be increased 500 or 1,000 per cent. The responsible housekeeper must have an apparatus which will be sufficient for the maximum demands, which is very much larger than necessary for the minimum demands. An establishment is very seriously handicapped in an attempt to secure fuel economy if only one apparatus is available. In such an establishment as this—and they are very numerous—very great economies may be obtained by providing both a large apparatus equal to the maximum demands, and also a small apparatus not too large for the minimum demands. I need not, perhaps, in this assembly point out that the cost of fuel for an oven is not very different, whether the actual load is large or small. That it costs almost, but not quite, as much fuel to bake a single article in an oven as it does a full Christmas dinner, assuming the time occupied is the same in each case. If the housekeeper is so unwise as to use a large apparatus for cooking a small article, she has only herself to thank for the consequent waste.

Devices have been tried for decreasing the capacity of a large oven by such means as putting in what are called "browning plates," and by raising the level of the burner to a high position in the oven; but all such devices involve trouble on the cook, and it may be taken as an axiom that the cook will not take trouble.

Economy of Communal Kitchens.

If we want real economy we must co-operate so as to do all our cooking at the same time in the same apparatus. The transformation of our insular ideas which must take place before this can be done is, of course, very great. But we must come to it if we wish to secure the maximum of economy; that is, we must establish communal kitchens very generally, not only for what are called the lower classes, but also for those higher in the social scale, who live within a reasonable distance of one another.

The disadvantage, I am sure, need not be as great as the ordinary housewife would anticipate. It would not be necessary, though it would be very desirable that all the persons served by one such kitchen should have the same dishes prepared in the kitchen. Each family might prepare their own. The objections to cooking all these dishes together would be chiefly of a vulgar character, such as that Mrs. Jones would object to Mrs. Brown's cook seeing what she is going to have for lunch, and that Mrs. Robinson did not desire her cook to have the opportunity of a conversation with Mrs. Smith. It would, indeed, tend to break down the absurd and vulgar suburban insularity of our present society. Any way, for our present purpose it would certainly save fuel and an infinite amount of labour. In ideally organised conditions and with a good general level of intelligence and education, the responsible cook might prepare her own dishes and specify for how long the article was to be cooked and at what temperature. The chefs employed would carry out these written instructions without responsibility. If such instructions were wrong the cook would know better next time. An alternative scheme might be for the cook in each household to do her own cooking at a central kitchen, having her own separate appliances—separate table, oven, hot plate, and the like set apart for the use of that particular household. This arrangement would sacrifice a large part of the economy and simplicity of some other schemes. By far the best and most economical scheme, both in food and fuel, would be that according to which each family had the choice of a certain limited number of dishes prepared and cooked in the communal kitchen and sold at cost price to the households.

The chief drawback to these schemes would be a tendency to make the young woman of the future even more incapable than the present-day one in domestic matters.

That many of these suggestions will be regarded as counsels of perfection, I have not the least doubt. So they probably are as things were before the war. But that they are easily possible of attainment I am sure, because similar things are done every day in many manufacturing establishments. Cooking is nothing but a manufacturing process, which is at present in the cottage-industry stage. Just as every cottager used to do her own weaving, so now every cottager does her own cooking—a waste of her own time and of the nation's food and fuel. I am pretty sure of this, that if once a woman became accustomed to the communal kitchen idea, she would never willingly return to the present back-woods scheme of each family maintaining a little hell in their own house.

The great advantage of this proposal from the point of view of fuel economy is that it would render possible the adoption of a type of large oven which is capable of attaining a measure of real economy, always having regard to the fact that we are tied to the combustion of fuel. Where we are now using stoves having an efficiency of 3 per cent. and under, we could in the improved conditions use a type having an efficiency which is probably in the neighbourhood of 40 per cent. and may even be higher, that is, we could divide the amount of fuel now used for cooking by from 13 to 20. On the higher scale, where we are now using 20,000,000 tons of coal per annum, we could attain the same service by the use of 1,000,000 tons of coke. I have good grounds for the belief that it would be possible to do the entire cooking of the whole population for an expenditure of fuel of 1,000,000 tons of coke per annum.

One further enormous advantage of the communal kitchen idea would be that it could be made a centre for the dissemination of accurate scientific information in all domestic subjects.

The women in charge of these kitchens should be specially trained women of understanding, high character, and capacity. I can conceive no more exalted occupation for any woman. She would naturally become, if she were capable of it, the adviser and teacher of every other woman within her sphere. She should be competent to advise in every detail of household management. The pay should be high, so as to attract the best women, and the examination, both theoretical and practical, severe. If possible the type of woman should be carefully chosen, so as to be the intellectual and social equal or superior of any woman whatever within her range. She would have the same sort of position, of great dignity, as is held by the matron of a large hospital. There should be no manner of favouritism possible in making such important appointments. If a woman was found incapable of doing justice to the post she should be ruthlessly retired, whether or not she were the niece of the Duke of Plazatoro. We cannot afford in this country to have any more Government irremovables; we have too many of them already. But unless I mistake very much the present temper of the country we shall not have so many of them in the future.

Until, however, a state of society is reached which makes this condition possible, it is necessary to consider how each household can be provided with cooking apparatus of their own without wasting more fuel than is unavoidable. Much may be done by the provision of suitable plant, and by providing that a plant should not be used for purposes for which it is not designed nor intended, particularly that no plant should be larger than is necessary for the work it has to do.

Practical Requirements of a Cook.

It is desirable to look at the matter from the purely practical standpoint of what is actually required in an ordinary small domestic establishment. It will, of course, be of no avail to suggest methods, however unexceptionable they may be, from the point of view of fuel economy, unless to some extent they fulfil the requirements of the cook.

These requirements are:—

1. One or more ovens of different sizes, any of which can be maintained at any desired temperature up to a maximum of 500 but not more.

2. An intensely hot surface for heating by radiation.

3. Means for rapidly boiling vessels such as kettles, saucepans and the like; also,

3A. for simmering vessels of water or food for relatively long periods.

4. Means for warming plates or dishes, for keeping food warm and similar low-temperature operations.

5. A continual supply of hot water for washing up.

6. An intermittent supply of actually boiling water for tea making, scalding, &c.

To these I would add, what most cooks are not conscious that they need, a hay box or non-conducting chest which will prevent loss of heat from any object placed within it.

The features which give satisfaction to the cook in these appliances are that they should be simple in construction, easy to handle, to control and to clean, of great power, and above all, certain and not capricious in action. There is no feature in an oven so exasperating as uncertainty. Those which will sometimes not get hot and sometimes will burn the food are responsible for a great deal of domestic trouble.

One essential feature of all apparatus of whatever kind for general domestic use is that the interior should be easy to clean. The fulfilment of such requirements no doubt tends to diminish the possible economy in operation, because it requires that all the inside surfaces should be exposed. The introduction of pipes or projections of various kinds into the oven would probably be regarded as making it difficult to clean, as facilitating the accumulation of grease, fat, &c., and so in a practical sense would be regarded as undesirable. But it must be pointed out that a flat plate between the hot flue gases (from whatever source they are derived) and the oven interior is a very inefficient means for transmitting the heat of the flue gases into the interior of the oven, and it is only used in practice on account of the fact that a flat plate is cheaper and easier to clean than if there are any projections. The requirements of a large house or institution are merely extensions and elaborations of these. In such establishments specially convenient appliances are provided for boiling by steam large quantities of vegetables, heating soup, making tea and coffee, steaming potatoes, and the like operations, but essentially all requirements are covered by the foregoing list.

(*To be continued.*)

* The first lecture of the course delivered by Mr. A. H. Barker, B.A., B.Sc., at the University College, Gower-street, appeared on March 15, 22, 29 and April 5, and the second lecture on April 12, 19, 26, May 3 and 10.

PROGRESSION

THE "Compleat" Contractor does not exist. The progressive contractor is aware that there is no finality about his craft. That is to say, he is a very different type from "the man who knows it all."

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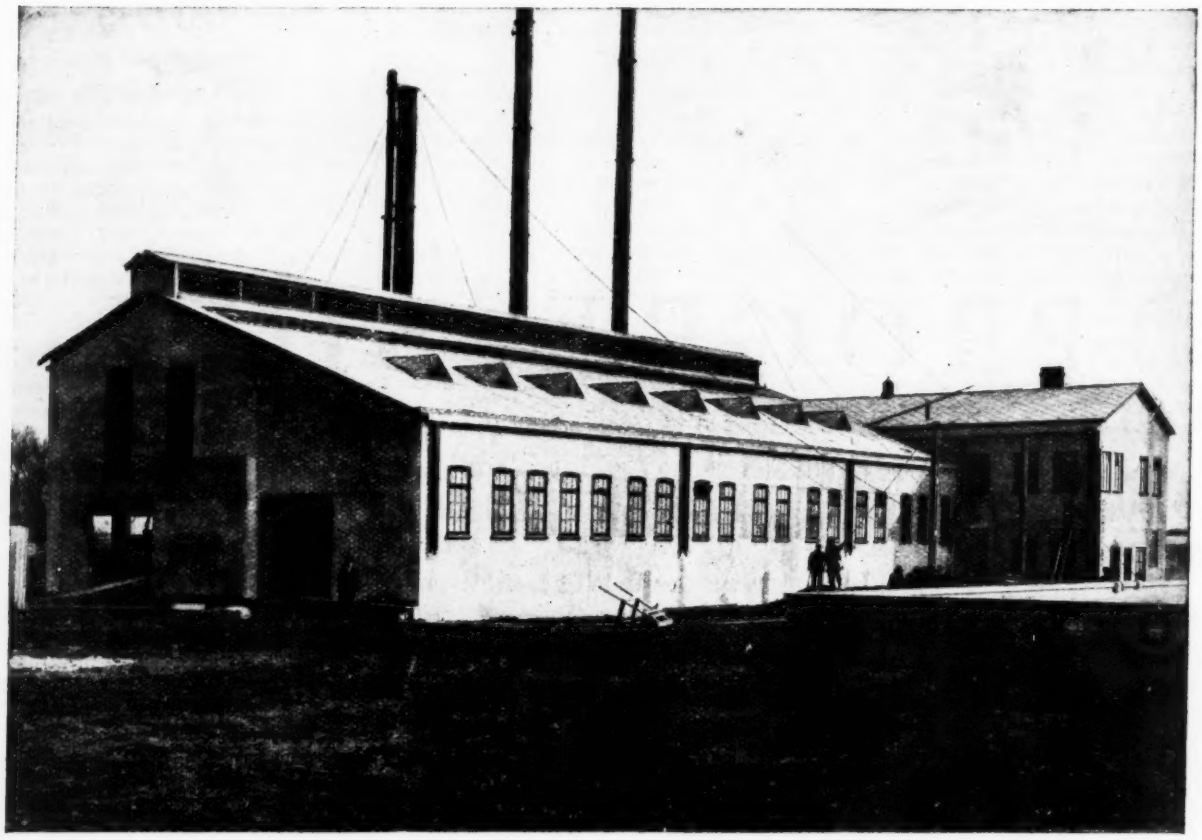

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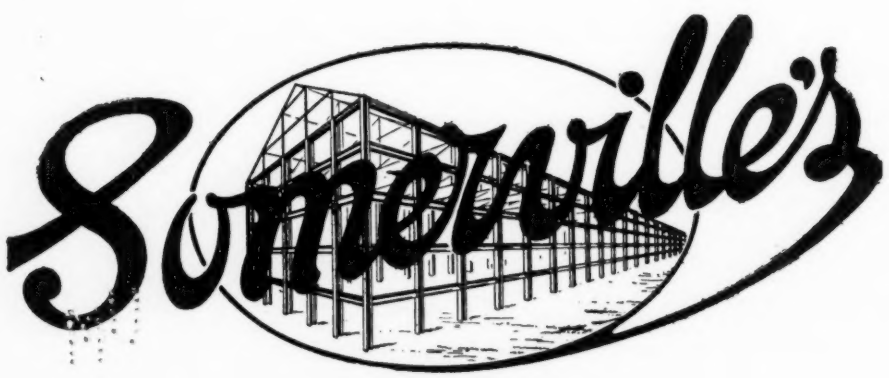

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THE HOUSING PROBLEM.

A DISCUSSION on the housing problem in Scotland took place at the annual conference of the Scottish district of the Institution of Municipal and County Engineers, held at the City Hall, Glasgow, recently. Mr. J. Lee, Paisley, Vice-President, presided, in the absence, through illness, of Mr. P. H. Palmer of Hastings.

Mr. W. Allan Macartney, A.M.Inst.C.E., Burgh Engineer of Johnstone, presented a paper on "Local Authorities and Housing." He said that up till recent years all the municipal housing has been on the tenement plan. It is clear, however, that the tenement has been for some time dropping out of favour, and one can see the gradation from the four-story tenement down to the two-story block, and finally to the semi-detached cottage. The latter is certainly the "last word" in municipal housing, but too expensive, one would say, for housing the poorer paid workman. Of course, some of the municipal tenements are in existence because the municipality could do no better. It had to clear out areas which were breeding grounds for both disease and crime, and the people dispossessed had to be provided for on the same site, or its immediate neighbourhood. In the future, one is fairly safe in saying, most tenement building will be found in cities and designed in blocks of two and certainly not more than three stories. Alongside the development from the tenement to the self-contained house has, naturally, come an increase in the number of apartments per house, and it is quite possible that the upward limit in this respect has not yet been reached. At the same time it must be made clear that the size of house a man is to occupy is an economic question as well as a moral one. It would be generally beneficial if the minimum size of house for a family were, as suggested, three apartments. The cost of such a house, however, is far beyond the reach of the very people who need it most—the poorest classes, who usually have the largest families. Hence if such a standard is to be pursued, not only will a State subsidy be required to cover the cost of erection over the pre-war cost, but an annual grant will be necessary as well. If the State is in earnest in this matter, it may be suggested that the simplest way would be to hand over the houses to the local authority free, on the distinct agreement that they were to be let at a fixed nominal rent to respectable parents with families of not less than say four. The author is of opinion that the single apartment house is still required in certain industrial communities, and if planned and occupancy regulated as in the Dundee scheme, no objection can be taken. For other classes the self-contained room and kitchen with separate offices would, provided planning and occupancy were regulated, also be found to suit many sections of the community. Such houses would make a vast improvement on many presently occupied, which, while not uninhabitable in the sense of the Act, have certainly served their day and generation. As a matter of fact the author is of opinion that if a vote were taken of the women in this matter, they would choose a room and kitchen with separate scullery-washhouse and W.C. in preference to a three-apartment house of the existing type. The common stair, washhouse and W.C. are the bugbear of many lives.

Mr. A. H. Campbell, Edinburgh, said the housing problem was so big they would require all the help that could be given by private enterprise to supplement the efforts of both the State and the municipalities. He was looking forward to a good deal of help from private enterprise, in the form of tenants' copartnery. He hoped before they went very far they would see a tremendous extension of schemes of copartnery. What a magnificent auxiliary they could be in supplying the necessary houses! Mr. Macartney spoke of cottage houses, but no one could say that there should be nothing but cottages, or nothing but tenements. The happy medium was to build self-contained cottages in the areas suitable for them in the suburbs of the town, and to have tenements in their proper place in the centre of large towns. Then they would have a happy blending of tenements and of cottages both in their respective and proper places.

Mr. Walker-Smith, Edinburgh, Scottish Local Government Board, said most of the members of the conference would be acquainted with the terms of the circular recently issued by the Central Authority indicating the measure of financial assistance which the State proposed to render to local authorities in the provision of houses. That was a matter of considerable importance. The terms of the circular were apparently not quite so clear as they had hoped, and various questions had been raised upon them. So far as he knew there had been no question of a practical nature as peculiarly concerning the municipal engineer. The questions which had been raised had been more with regard to the financial provisions and the manner in which this financial assistance would be given. Various questions had been raised, and more, no doubt, would be raised, not particularly critical, but more for the purpose of elucidating exactly what the intentions of the Government were. Now, that was an important matter, but so far as he could foresee there was no reason at all why municipal and county engineers, and those who would be responsible for advising local authorities, should not proceed at once with the preparation of their housing schemes. Then the Local Government Board were in co-operation with the Institute of Scottish Architects about promoting a competition. It was a competition for the design and lay-out of suitable areas, and the design of houses suitable for the working classes of Scotland. The Local Government Board were certainly not hidebound to any particular method of housing the workmen, and this competition would enable architects to submit designs for tenements, for flatted cottages, and for ordinary cottages. The competition would be a national competition, and the assessors would be appointed almost immediately. He felt quite sure, when they saw the names of the assessors, they would agree that they were such as would command confidence, and they would be pleased to find that the municipal and county engineer had not been overlooked, but was represented upon a very select body of assessors, numbering five. The Local Government Board had, during the last two or three years, been erecting a considerable number of houses, many hundreds of houses, for war workers, and it had been thought that it would be useful if a pamphlet or brochure were issued dealing with the question of design, planning and construction as they had arisen in the construction of these houses. Such a pamphlet was now in draft, and would, he hoped, be in the hands of local authorities and their advisers at an early date. Then the Local Government Board were about to appoint what he regarded as a very important committee. It was a women's committee. Six women would be appointed to visit a considerable number of housing schemes and examine the plans of many others, and advise as to the requirements of the workmen's house from the housewife's point of view. That, he thought they would agree, would be a very useful report for them to have in their hands. Then the Local Government Board appointed some time ago a committee to consider questions of construction, and report as to the best means of securing economy and dispatch in the provision of workmen's houses. That report would be in their hands in a very short time. There had been other committees which had been appointed, which would report at a very early date. Those reports would deal with the provision of materials—suitable materials in the proper localities at the time when they were wanted.

Mr. J. Thomson, City Engineer and Architect of Dundee, then read a paper on housing the poorest classes. Describing the scheme adopted in that city he said an important and a desirable departure has been made from the former system of lay-out in Dundee and other towns. Instead of continuous ranges of tenements fronting streets, with openings only at great distances apart, it is proposed that tenements should be in short lengths, with much larger open spaces in front, in rear, and at the ends of the blocks. The erection of wash-houses and cellars, usual on the back of tenements, has been entirely omitted, and the land kept free from outbuildings, boundary walls, and similar obstructions to the free flow of air and admission of sunlight. A further important departure provides land on which wash-houses and baths may be erected for the use not only of those who will occupy the new houses, but for the convenience as well of other householders in the immediate neighbourhood. Moreover, keeping fully in view that the schemes are intended to accommodate, under the best possible conditions, those who presently occupy the smallest size of house, provision is made in each scheme for land on which a day nursery may be erected. If a forward step is to be made in the type of house to be provided for the working classes, and if the type adopted is to be one which will improve not only their housing conditions but their whole environment as well, then the prevailing method of erecting high, barrack-like buildings with no open space in front except the public street and limited space in rear must come to an end. If land can be acquired at a reasonable price, the buildings can quite justifiably be spread over a much larger area than formerly, and all reasonable means taken to provide the dwellers in the new tenements with facilities and surroundings as good as those provided for dwellers in cottages. With these objects in view, it is recommended that in the entire area of each of the schemes the height of tenements be limited to two stories, with two exceptions in the "Stirling Park Scheme," where the surroundings and special circumstances justify three stories. In point of fact, the new type of tenement should be a happy mean between the former barrack-like tenement and the modern cottage. In tenements of this type the size of houses now urgently required to make a commencement in solving the housing problem can be conveniently and suitably arranged; and houses of only three rooms and under would be provided. Calculated on the basis of erecting houses of three rooms, of two rooms, and of one room, each equipped with proper facilities and conveniences, the number should not exceed twenty to the acre, and this would compare with the existing practice of approximately eighty to the acre in tenement areas.

In designing houses of one room, of two rooms, and of three rooms, each containing thorough modern equipment, the aim has been to provide accommodation suitable for the requirements of those employed in the immediately adjoining industrial areas.

Cost of buildings, less grant-in-aid—	
3 schemes, 965 houses	£252,000
Estimated annual Expenditure—3 schemes, 965 houses	20,734
Estimated annual Revenue—3 schemes, 965 houses	20,754

In explanation of these figures it is pointed out that the rents of houses have been fixed at such rates per week as will enable revenue to meet expenditure. The rents varied from 6s. 6d. for houses of living room and kitchen-scullery to 9s. 6d. per week for houses of living room, two bedrooms and kitchen-scullery.

Mr. F. G. Holmes, Glasgow, remarked that Mr. Thomson was endeavouring to solve the housing problem in the most satisfactory manner, but unless they raised the social and moral standard of the people they would never improve housing conditions.

Bailie Lochhead, Paisley, remarked, with reference to baths, it seemed to him that the great thing was to provide conveniences of this kind at the place of employment rather than at the worker's home. They would then avoid workmen having to travel in their dirty clothes in public conveyances, and also carrying the dirt to their homes.

Housing Needs, Sydney.

It is officially reported that 300,000 houses will be required for workmen in Sydney after the war. It is reported that the State Governments intend to demand that they shall have "pleasant architecture and plenty of air space."

THE BUILDING TRADE.

WORKMEN'S COMPENSATION AND AIR RAIDS.

WE have already in these pages drawn attention to the decision of the House of Lords in the case Allcock *v.* Rogers (*Weekly Notes*, April 6), in which it was laid down that in the case of risks of a general nature, such as injury from lightning and bombs from enemy aircraft, it was still necessary to inquire whether the nature of the employment specially exposed the workman to such risks; an exception to the principle laid down by the House of Lords in Dennis *v.* White as governing ordinary street risks (see the *Builder*, Legal Section, October 26).

In Allcock's case, the man, a potman, was engaged in cleaning a brass door plate in the street when he was injured by a bomb from an enemy aircraft, and it was held that there was no evidence that his position in the street exposed him to greater risk than if he had been in the public house.

This case has been distinguished in a recent decision in the Court of Appeal in the case Bird *v.* Keep (*The Times*, June 25). In that case, a porter and messenger employed by a varnish merchant was sent to an oil and colour warehouse in the City, and while he was there the building was struck and set on fire by an enemy bomb and he lost his life. The County Court Judge had found that, owing to the inflammable matter stored on the premises, there was a special risk from fire and he awarded compensation to the dependents, and this finding was upheld in the Court of Appeal.

There are other points in the case as to proof of the cause of death, but in the present note we only draw attention to the decision as shewing the distinction between an ordinary exposure to a general risk and a special exposure to such a risk incidental to the employment.

LEAD PRICES.

THE Minister of Munitions has issued an Order in reference to the prices of lead. It is as follows :—

Whereas the Minister of Munitions is desirous of modifying the maximum prices of certain classes of lead specified in the schedule to the Lead Order, 1917, now the Minister of Munitions, in exercise of the powers conferred upon him by the Defence of the Realm Regulations and all other powers enabling him, hereby gives notice and orders as follows :—

1. As from the date hereof, and until further notice, the Lead Order, 1917, shall take effect as if in the schedule thereto opposite to the respective classes of lead set out in the first column following the figures set out in the second column following were substituted for the figures set out in the third column following :—

Class of Lead.	New Figures. £ s. d	Original Figures. £ s. d.
Sheet Lead	41 0 0	39 10 0
Lead Pipe	41 10 0	40 0 0
Dry White Lead ..	51 0 0	46 0 0
White Lead in Oil ..	58 0 0	53 0 0
White Lead in Oil ..	60 0 0	55 0 0
Red Lead and Litharge	45 0 0	42 0 0

2. This Order may be cited as the Lead (Amendment) Order, 1918.

The Longest Building in the World.

It has been stated that the longest building in the world is shortly to be erected by the Bethleham Steel Company at its shell-loading plant at Mays Landing. The structure is to be exactly one mile long and one and one-half stories high. It will be of frame construction, but the purpose for which it is to be erected is not as yet disclosed.—*American Architect.*

NOTES FROM THE FOREIGN PRESS.

A NEW 60-million gallon pumping station for Louisville (Ohio) Waterworks has been built on a reinforced concrete open-well caisson 90 ft. square and 33 ft. deep, containing 5,858 cubic yards of concrete and 145 tons of reinforcing steel. Particulars are given in *Engineering News Record* for May 9 last.

In the issue for May 2 the same journal describes the new double-track jack-bridge of the Bessemer and Lake Erie Railroad over the Alleghany River. The bridge has been designed to carry heavy ore-train traffic and the six main spans, ranging from 272 ft. to 520 ft., are continuous, arranged in two groups of three each. A special feature is a 350-ton concrete counterweight at the end of the southerly span to counteract any uplift that might be caused by live load on the adjoining 520 ft. span.

In an issue of the *Zentralblatt der Bauverwaltung* for 191[illegible], p. 611, the details were given of a competition open to the architects of East Prussia for designs for the reconstruction of the buildings surrounding the Evangelical Church at Lyck, which had been destroyed in the war. Seventy-seven competitive designs were submitted, and the assessors have awarded the first premium to Paul Engler of Gerdauen.

In *Beton und Eisen* for May 4 particulars are given of various forms of roof in concrete buildings. For factory purposes the flat roof has many advantages, and would be more widely employed than it is at present but for the difficulties entailed by suitable provision for the discharge of the rain-water over large level areas. It is shown that the piers which support the various floors, if made hollow, or if composed of cast-iron sheathed with concrete, can readily be adapted to carry off the roof-water, and the arrangements of the head and base of the pier with suitable contrivances for this purpose are shown in plan and section. Photographs illustrate the construction of a factory, in which the piers are used as rainwater down-pipes and the design of the flat roof is explained by reference to diagrams. To avoid stoppage in the pipes, the rain-water pipe is fixed in the interior of the cast-iron columns, and is made removable, so that it can be drawn out at the roof level. Inspection pits are constructed in the basement, at the foot of each down-pipe, to see that nothing interferes with the flow of water. This plan, though somewhat more costly, has many named advantages. In the case cited, 240 cast-iron columns are employed and the rain water is taken down through four storeys; to remove an entire length of rain-water pipe and replace it in the column does not take more than ten minutes and all danger of rust in the main columns is avoided.

The importance of making further provision for the discharge of flood-water in the Danube, and the question of the extension of the City of Vienna, are discussed in *Zeitschrift des Oesterr Ingenieur und Architekten-Vereines* for May 10 with reference to a scheme for improvements and the utilisation of lands now subject to inundation. The illustrations show the formation of a new canal, alongside the present bed of the Danube, which would carry away the superabundant water. A large area of low-lying land would be reclaimed, and a site would be provided for parks and dwellings, with a magnificent block of buildings having a huge arch forming a bridge. This would take the line of the present Kronprinz Rudolfstrasse. By this means an imposing central building would be secured for Halls of Commerce and Industries, offices for the governing bodies of the Chambers of Commerce, and for the great city merchants, with rooms for exchanges, sample displays, public meetings, and telegraph and telephone purposes. The whole would be crowned by a mighty tower, from which magnificent views of the city and the surrounding country would be obtained.

In *Beton und Eisen* for February 5 particulars are given of the construction of walls in fireproof concrete. Solid or hollow stiffening members of fireproof material are built into the body of the concrete. By using porous, hollow inserts, the escape of moisture is facilitated.—(J. Chasseur, German Patent No. 291,845.)

In the same issue an invention is described relating to a process and appliance for producing a floor capable of taking nails, but consisting principally of concrete. A special rectangular mould is used with adjustable partitions and one fixed and one movable crosspiece. (A. Schotz. German Patent No. 296,044.)

The Prag-Lieben automobile factory is said to represent the first application of the "mushroom" ceiling type of ferro-concrete construction in Austria-Hungary. The girderless construction is described and illustrated in detail by J. Polivka in *Beton und Eisen* for February 5, and a special point is made of the use of slender cast-iron tubular cores for the supporting pillars, these tubes being surrounded by ferro-concrete with spiral reinforcement. The system of floor armouring is the quadruple system used so extensively in America in Turner floors. The larger columns are of octagonal section with an internal diameter of 66 cm., and carry about 400 tons load. In addition to deadweight, allowance is made for bending moment in designing the head and foot of columns; this is especially necessitated by the provision made for cranes. The whole construction is considered to be architecturally and technically satisfactory.

NATIONAL HEALTH INSURANCE.

WE have received the following statement from the National Health Insurance Commissioners :—

The Insurance Commissioners (England) desire to bring to the notice of employers of labour certain important changes as regards the payment of contributions resulting from the National Health Insurance Act, 1918, which comes into operation on Monday, July 1.

(1) *Cases of Low Wage Earners.*

The employer has in future to pay the whole weekly contribution (7d. for a man, 6d. for a woman), including the State contribution of 1d. in cases to which it applies. He can only deduct the same amount from the worker's wages as hitherto, but he can recover the State contributions (where payable), by making application to the Commissioners on the prescribed form before the end of the half-year following that in which the contributions are payable.

(2) *Section 47 of the Act of 1911.*

The section, under which an employer could pay contributions at a reduced rate in consideration of his undertaking to pay wages during certain periods of sickness, is repealed. The employer is required in future to pay contributions at the full rate; and he has the right to make the ordinary deduction from wages, irrespective of any obligation he may be under to continue payment of wages during sickness.

Accordingly, as from July 1, 1918, employers of insured persons in Great Britain will, *in all cases*, pay contributions at the rates of 7d. a week for a man and 6d. a week for a woman. For an exempt person, *i.e.*, a man or woman holding a current certificate of exemption issued by the Commissioners, the employer pays 3d. a week. No deduction may be made from the wages of an exempt person; the amounts that may be deducted from the wages of insured persons are shown on the contribution cards.

Further information regarding the duties of employers under the new Act is contained in a revised edition of Pamphlet A, which can be obtained free of charge from the Commissioners.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur :—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Aberdare	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	1/-
Accrington	11½	11½	1/-	1/-	1/-	10	9½	8	8	8
Altrincham	1/5§	1/5§	1/5§	1/5§	1/4§	1/4	1/3	1/1§	1/1§	1/1½§
Ashton-under-Lyne	1/4½§	1/4½§	1/4§	1/4§	1/3§	1/4	1/3	1/-§	1/-§	1/1§
Barnsley	1/2	1/2	1/1½	1/-	1/-	1/1	11	11	11	11
Barrow-in-Furness	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/2	1/-	1/-	1/-
Barry	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	1/-
Bath	11½	11½	11½	11	11	11½	10½	9	9	9
Bedford	11	11	11	11	11	11	9	9	9	9½
Birkenhead	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/2½	1/2½	1/2½
Birmingham	1/4	1/4	1/4	1/4	1/3½	1/4	1/3§	1/1	1/1	1/1
Bishop Auckland	11	11	11	11	1/2	11	10	8	8	8½
Blackburn	1/1	1/1½	1/1½	11	1/0½	1/2	1/-	8½	9	9
Blackpool	1/-	1/2	1/2	10½	8½	1/-	10½	8	8	8
Bolton	1/4§	1/4§	1/3	1/2	1/2	1/4	1/3	9	9½	10
Bournemouth	1/1	1/1	1/1	1/1	1/1	1/1	1/-	10½	10½	10½
Bradford	1/2½	1/2½	1/2	1/2½	1/2½	1/3	1/1	1/-	1/-	1/-
Bridgwater	10	10	10	10	10	10	9	8	8	8
Brighton	1/-	1/-	1/-	1/1½	1/-	1/-	10½	9½	9½	9½
Bristol	1/2½	1/2½	1/2½	1/2½	--	1/2½	1/1½	11½	11½	11½
Burnley	1/1	1/1	1/0½	1/-	1/-	1/2	1/-	8½	8½	8½
Burton-on-Trent	1/1	1/1	1/1	1/1	1/1	1/1	1/0½	10½	10½	10½
Bury	1/4½§	1/4§	1/4§	1/3	1/3½	1/4	1/3	1/-§	1/0½§	1/0½§
Cambridge	11	10½	10½	10½	10½	11	9	7½	7½	7½
Cardiff	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	1/-
Chatham	10½‡‡	11‡‡	11‡‡	11‡‡	11‡‡	11‡‡	9½‡‡	8‡‡	8‡‡	8‡‡
Chelmsford	8	7½	8½	9	—	7½	6½	5	5	6½
Cheltenham	1/0½	1/0½	1/0½	1/0½	1/0½	1/0½	1/0½	10½	10½	10½
Chester	1/2	1/2	1/2	1/2§	1/-	1/2§	1/1§	10½	11	11
Chesterfield	1/-	1/2	1/-	11	10	11	1/-	8-8½	8-8½	8-8½
Colchester	10	10½	10½	11	10	11	8½	7½	7½	7½
Coventry	1/2	1/2	1/2½	1/2	1/2	1/2½	1/1	11½	11½	1/0½
Crewe	10	1/0½	1/0½	10	10	1/2	1/0½	7	7	7½
Darlington	1/1	1/1½	1/1½	1/1½	1/2	1/-	1/3	10½	10½	10½
Derby	1/2	1/2	1/2	1/2	1/2	1/2	1/0½	11	11	11½
Doncaster	1/-	1/1	1/1	10½	10½	10	9½	10½	10½	10½
Dudley	9½	1/2	1/2	10	10	9½	1/1	11	11	11½
Durham	10½	10½	10½	10½	10½	9½	9	7½	7½	7½
East Glam. and Mon. Valleys	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	1/-
Exeter	1/-	1/-	1/-	1/-	1/-	1/0½	11	10	10	10
Folkestone	1/-	1/-	1/-	1/-	1/-	1/-	10	9	9	9
Gloucester	1/0½	1/0½	1/0½	1/0½	1/0½	1/0½	11½	10½	10½	10½
Grantham	9½	10	9½	9½	10	8½	8	8	7½	8
Grays	—	1/-	1/-	—	—	1/-	10½	—	10	10
Grimsby	1/2½	1/2½	1/2½	1/2§	1/2½	1/2½	1/-§	1/-§	1/-§	1/-§
Great Yarmouth	10	10	10	10	10	10	8½	7	7	7
Halifax	1/1½	1/1½	1/1½	1/1½	1/1½	1/2	1/1	10½	10½	10½
Harrogate	10½	9½	1/-	9	8	1/-	9½	7½	7½	7½
Hartlepools	1/2	1/2	1/2	1/2	1/2	10½	1/3	11	11	11
Hastings	10	10	10	10	10	10	8½	7	7	7
Hereford	10	10	10	10	10	10	9	7½	7½	7½
Huddersfield	1/2½	1/2½	1/3	1/-	1/-	1/2	11	11½	11½	11½
Hull	1/3	1/3	1/3	1/3	1/3	1/3	1/1½	1/1	1/1	1/1
Ipswich	1/-	1/-	1/-	1/0½	1/-	1/0½	10½	9½	9½	9½
Lancaster	1/-	1/-	1/-	1/-	1/-	1/-	1/-	10	10	10
Leamington Spa	10½	10½	10½	10½	10½	10½	9½	7½	7½	7½
Leeds	1/2½	1/2½	1/2	1/2	1/2	1/3	1/0½	11½	11½	1/-
Leicester	1/2	1/2	1/2	1/2	1/2	1/2	1/0½	11½	11½	1/-
Lincoln	10½	1/-	10½	10½	10½	10½	10	9½	9½	9½
Liverpool	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/2½	1/2½	1/2½
Llanelly	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	1/-
London	1/3½	1/3½	1/3½	1/3½	—	1/3½	1/0½	11½	11½	11½
Loughborough	10	1/1	10½	10	10	10	11	8½	8½	9½
Luton	1/1	1/1	1/1	1/1	1/1	1/1	1/-	11	11	11
Maidstone	11	11	11	10	10	11	10	8	8	8
Manchester	1/5§	1/5§	1/5§	1/5§	1/4§	1/4	1/3	1/1§	1/1½§	1/1½§
Mansfield	1/1½	1/1½	1/1½	1/1½	1/1½	1/1½	1/0½	10½	10½	10½
Merthyr Tydfil	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	1/-
Middlesbrough	1/2	1/2	1/2	1/2	1/2	1/2	1/3	11	11	11
Newcastle-on-Tyne	1/2	1/2	1/2	1/2	1/2	1/3	1/1	11	11	11
Newport, Mon.	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	1/-
Northampton	1/-	1/-	1/-	1/-	1/-	1/-	11	9½	9½	9½
Norwich	10½	10½	10½	10½	10½	10½	9½	8	8	8
Nottingham	1/2½	1/2½	1/2½	1/2½	1/2½	1/3	1/1½	1/0½	1/0½	1/0½
Oldham	1/3	1/3	1/4§	1/2	1/-	1/4	1/3	10½	10½	11
Oxford	11	10½	10½	10½	10½	10½	9½	8	8	8
Plymouth	1/2*	1/2*	1/2*	1/2*	1/2*	1/2*	11¶	1/-	11	11
Pontypridd	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	1/-
Portsmouth	1/-	1/-	1/-	1/-	1/-	11	10	9½	9½	9½
Preston	1/2	1/2½	1/2	1/1½	1/1	1/2	1/1½	10	10½	10½
Reading	1/1	1/1	1/1	1/1½	1/1	1/1	11½	10½	10½	11
Rochdale	1/3	1/3	1/4§	1/3	1/2	1/4	1/3	11½	11½	1/-
Rochester	10½‡‡	11‡‡	11‡‡	11‡‡	11‡‡	11‡‡	9½‡‡	8‡‡	8‡‡	8‡‡
Rugby	1/1½	1/1½	1/1½	1/1½	1/1	1/1½	1/0½	10½	10½	11½
St. Albans	10	10	10	10	10	10	9	8	8	8½
St. Helen's	1/6	1/6	1/6	1/6	1/6	1/5	1/3	8	8	8
Scarborough	1/-	1/-	11	1/-	9½	1/-	8‡	9	9	9
Sheffield	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/1½	11½	11½	11½
Shrewsbury	8½	11½	1/3	9½	—	8½	7	8½	8½	8½
Southampton	1/1	1/1	1/1	1/1	1/1	1/1	1/-	10½	10½	10½
Southend-on-Sea	10	10	10	10	P'cework	10	9	8	8	8
Southport	1/2	1/3	1/2	1/2	1/2	1/1	1/1	10	10	10
South Shields	1/2	1/2	1/2	1/2	1/2	1/1*	1/1	11	11	11
Stockport	1/3	1/2½	1/2½	1/-	1/1½	1/4	1/3	10	10	10
Stockton-on-Tees	1/2	1/2	1/2	1/2	1/2	10½	1/3	11	11	11
Stoke-on-Trent	1/0½	1/0½	1/0½	1/0½	1/0½	1/-	11½	10	10	10
Stroud	11½	11½	11½	11½	11½	11½	11	9½	9½	9½
Sunderland	1/2	1/2	1/2	1/2	1/2	1/1½	1/1	11	11	11
Swansea	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	1/-
Taunton	1/-§	1/-§	1/-§	1/-§	1/-§	1/-§	11§	9½§	9½§	9½§
Torquay	10	10	10	10	10	10	11	8	8	8
Wakefield	10	1/3§	1/2½§	1/-	1/-	1/1	1/-	10½	10½	10½
Walsall	1/1½	1/1½	1/1½	1/1½	1/1½	1/1½	1/-	11½	11½	11½
Warrington	1/3	1/3½	1/3	1/3½	1/3½	1/3	1/2	11	11½	11½
West Bromwich	11	11	10½	10½	—	10	9	8	8	8
Wigan	1/4§	1/4§	1/4§	1/3	1/2	1/3	1/3	1/0½§	1/0½§	1/0½§
Windsor	1/-	1/-	1/-	1/-	1/-	1/-	10½	9	9	9
Wolverhampton	1/2	1/2	1/2	1/2	1/2	1/2	1/0½	11	11	11
Worcester	1/-	1/-	1 -	1/-	1/-	1/-	10	10½	10½	10½
York	1/-	1/2	1/-	1/2	1/-	10½	9½	11½	11½	11½

The Masons' rate given is for bankers: fixers usually ½d. per hour extra. * War bonus of 2s. per week granted. †War bonus of 3s. per week granted. ‡War bonus of 3s. 6d. per week granted. ‡‡War bonus of 5s. per week granted. §War bonus of 6s. per week granted. ¶War bonus of 7s. 6d. per week granted. §These rates include all 12½ per cent. bonuses. [The above rates, unless otherwise shown, are exclusive of 12½ per cent. increase granted by the Committee of Production to workers engaged on munition work.—ED.]

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ABERAVON.—At the last meeting of the T.C. the Surveyor reported that plans had been prepared for 400 additional houses, but it was necessary that sites should first be selected. It was decided to adopt the recommendation that the scheme should be on the basis of 12 houses to the acre, and the Surveyor was instructed to report upon the sites suggested by him.

BALLINCOLLIG.—Replying in the House of Commons to Mr. Archdale, Mr. Forster stated that £12,000 is to be expended on alterations to the barracks and on the erection of a store and on increasing the railway facilities.

BELFAST.—Proposals are being made for the erection of cold storage.

BIRMINGHAM.—The Board of Guardians has agreed to purchase 62½ acres of land adjoining the Marston Green Children's Homes for extension purposes, the price not to exceed £7,000. The Corporation has agreed to lease a plot of land in James Watt-street to Messrs. Mitchell & Butler, Ltd., for the purpose of extending the "Bell Hotel."

BLOFIELD.—It was stated at the last meeting of the R.D.C. that at least a hundred new cottages are required in the district.

BOURNEMOUTH.—Plans passed by T.C.:—Garage, Bracken Coombe, Branksome Wood-road, for Lieut.-Col. McCarthy; alterations and additions, Christchurch-road, Boscombe, for Messrs. Butler & Sons; alterations and additions to premises rear of Wrentham-place, Grove-road, for Mr. Paton.

COLCHESTER.—The Essex E.C. has decided to purchase a house and premises, with about four-fifths of an acre of land, adjoining the County High School for Girls and the Technical College. The buildings will be adapted for educational purposes.

CORK.—Sanction has been given to the R.D.C. raising a loan for the construction of sewers in the Skahabeg-road.—Messrs. Eustace & Co. have offered to erect a hostel at Castlemartyr from designs by Messrs. R. Walker & Son.

DUBLIN.—It is proposed to rebuild 63, Middle Abbey-street from plans submitted by Mr. J. Booth.—Mr. T. J. Cullen is the architect and Mr. R. Gough the builder for the re-erection of the premises of Messrs. Fitzgerald in Middle Abbey-street.

DUDLEY.—Plans passed by T.C.:—Time office, sanitary conveniences, &c., Bull-street, for the Shropshire, Worcestershire and Staffordshire Electric Power Co.; new gun room, Hall-street, for Messrs. A. Harper, Sons & Bean; galvanising shop and warehouse, Cleveland-street and Charlotte-street, for the Co-operative Wholesale Society, Ltd.

EAST HAM.—Plans passed by B.C.:—Stabling, Napier-road, for Mr. S. Townsend.

GLASGOW.—The Treasury have intimated to the T.C. that to provide additional accommodation for cases of tuberculosis they are prepared to authorise the raising of a loan of £125,000 for an extension of Knightswood Hospital, provided that no binding commitments are entered into or operations begun until guarantees are secured that the necessary labour, materials, fittings, &c., will be available. They are not prepared at present to sanction a loan for the extension of Bellefield Sanatorium, and think the Corporation should go further into the matter in consultation with the Local Government Board for Scotland. The Town Clerk has been instructed to forward the plans of the extension of Knightswood Hospital to the L.G.B. for approval, and to make application to the Ministry of National Service for a licence for the construction of the buildings. The General Finance Committee, having taken the opinion of counsel relative to the obligation of the Corporation to maintain the city churches, including St. George's Parish Church, the foundations of the steeple of which have partially given way, have instructed the Town Clerk to intimate to the Presbytery of Glasgow that it is proposed to make application to the Ministry of Munitions to carry out such repairs on the church as may be found to be immediately essential with the view of the church again being made fit for public worship, and to obtain from the City Engineer details of the repairs he would propose.

GRANTHAM.—Plan passed:—Sanitary improvements, 48, Greenhill, for Miss Bradstock.

HUDDERSFIELD.—The Housing and Town-Planning Committee has resolved that, having regard to the Government's promised assistance, a scheme be prepared for erecting 1,200 houses, with necessary plans and estimates, for submission to the L.G.B.

HULL.—The City Architect has reported to the Property Committee that much needed housing accommodation could be provided by the conversion of closed business premises into houses.

KILBURN.—At the instance of the Housing Committee the Board of Guardians has furnished the L.G.B. with a list of the works needed after the war. Included in the list are two sick wards, an operating theatre, chapel, and new offices.

KIRKSTALL.—On the suggestion of Colonel Kitson Clark, the Leeds Parks Committee have decided that the walls of the museum at Kirkstall Abbey shall be

* See also our list of Competitions, Contracts, &c.

cleaned and distempered, that the plans, &c., removed from the walls shall be reinstated, and other improvements carried out.

KING'S LYNN.—An inquiry under the Board of Agriculture and Fisheries has been held into proposals for the improvement of the fenland drainage systems. The recently-constituted Lower Ouse Drainage Board had applied to the Board for their approval of suggested works, comprising the extension of the existing training walls of the Ouse outfall from their present sea end below Lynn to a point three miles distant in a northerly direction, and incidentally the clearing and dredging of the channel. The second portion of the work was described as a diversion of the River Ouse by the construction of a new channel and flood banks between a point at or near Holly House, Wiggenhall, St. Mary Magdalen, and a point about 13 chains south of the railway bridge crossing the river between Magdalen and Runcton Holme, of the necessary depth and width, together with all incidental connectional work. The third part of the proposed works, consisted of various straightenings of the River Ouse at twenty-five different points from St. Germans Bridge up to south of the existing Denver sluice.

LEEDS.—The Development and Improvement Committees are proposing to acquire from the Middleton Estate and Colliery Company, "for the purposes of a garden city and the erection of houses for the accommodation of persons of the working classes," an area of 326 acres of land, with mineral rights, at Middleton, at the price of £140 per acre, and to construct a tramway or light railway to the site from the city, for which the company will give the necessary land and ballast.

NEWARK.—The surveyor has been instructed to prepare housing schemes for sites in Queen's-road and Hawton-road.

NEWCASTLE-ON-TYNE.—The Housing Committee has adopted a report recommending the City Council to develop 116 acres on the Walker Estate for housing purposes. If developed on the basis of fifteen houses to the acre, 1,740 dwellings would be provided, or 1,392 if the L.G.B.'s recommendations were strictly followed.

NEWPORT PAGNELL.—The U.D.C. is contemplating the purchase of 2½ acres of land at Newton Longville for the erection of houses.

NORTHAMPTON.—Plans passed by T.C.:—Bottling store, Weedon-road, for Smith, Major & Stevens, Ltd.; rebuilding kitchen, &c., No. 28, Sheep-street, for Mrs. Selby; rest room, &c., at factory, Lea-road, for J. Sears & Co., Ltd.; reconstruction of drains, No. 8, Regent-square, for Mr. W. Colledge; rubber solvent shed, Main-road, Far Cotton, for Crown Foundry Co., Ltd.; alterations to premises, Nos. 68 and 70, St. George's-street, for Mr. Douglas; alterations to premises, No. 44, East Park-parade, for Mr. A. R. Cleaver.

PLYMOUTH.—Plans passed by T.C.:—Extension to cafe, 199, Union-street, for Mr. C. Williams; alteration to roof of shop adjoining Lockyer Hotel, for Mr. J. Truran; extension to loft, 74, Cromwell-road, for Mr. Broker; extension to cinedrome, Mutley Plain, for Mr. J. Munford.

ROMFORD.—Plans passed by R.D.C.:—House on the south side of Deyncourt-gardens, Upminster, for W. P. Griggs & Co., Ltd., and additions and alterations to "Beredens," Cranham, for Lady Petre.

RYTON.—The U.D.C. has been offered the field east of Thorpe Cottages, for housing purposes, at the price of £1,500. The Council has decided to approach the owners of the cricket-field to see if they are willing to sell.

SHIPLEY.—The U.D.C. proposes to improve the heating of the Victoria Hall in the Saltaire Institute, at a cost of £250.

TODMORDEN.—The T.C. has agreed to purchase a site on which to erect an electric meter station.

UXBRIDGE.—The R.D.C. has passed plans for alterations at West Drayton Mill. The Cowley P.C. has informed the R.D.C. that twenty-five houses will be needed in the parish after the war, and two pieces of land have been selected on which to erect them.

WALLASEY.—The L.G.B. have sanctioned, when Treasury restrictions are removed, the borrowing of £11,150 for the purchase of land between Mill-lane and Love-lane, Poulton, as a site for the erection of houses for the working-classes under the Wallasey Corporation housing scheme.

WANDSWORTH.—It is proposed to make up Fairfield-street and the Causeway at an estimated cost of £3,805. The following plans have been passed:—By Mr. E. Tribe, for partial re-drainage of premises of Highways Construction, Ltd., The Osiers, Point Pleasant, Southfield; by Mr. C. J. Stanford, for re-drainage of 199 and 201, and partial re-drainage of 203, Longley-road, Tooting; by Mr. W. J. Baker, for re-drainage of 92, 94, 96, and 98, Clifton-street, Clapham North, and of premises at rear.

WELLINGTON (SHROPSHIRE).—Mr. R. Blakeway Phillips (surveyor) has presented a scheme to the R.D.C. for the erection of 75 workmen's houses in the rural district. He considered that the most economical type of house for a rural housing scheme should provide a living room, kitchen, scullery, with space for bath if thought necessary, and the necessary out-offices, including a pigstye and an area for garden, about 40 yards by 10 yards. He had estimated roughly that the Council could erect 75 houses at a cost of £300 per house, or a total of £22,500. The deficiency to be met by the Council would be £2 4s. 6d. per house.

WELLS.—At a meeting of the R.D.C. the sanitary inspector presented a report on the housing question. In Meare all the houses could be put in fair order without any great expense to the owners, and another block of seven houses would meet all the needs of the parish. In other parts of his district there was no dearth of houses.

YEOVIL.—Plans passed by T.C.:—Additions to factory premises, for Messrs. Atherton & Clothier, Ltd. premises, Mill-road, for Mr. E. Pittard.

YORK.—Plans passed by T.C.: Drying store, Brass Foundry, Cromwell-road, for Mesrrs. T. Cooke and Sons, Ltd.

Competitions, Contracts, &c.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

The date given at the commencement of each paragraph is the latest date when the tender or the names of those willing to submit tenders, may be sent in.

BUILDING AND PAINTING.

JULY 6.—**Norwich.**—REPAIRS, &C.—The Norwich Board of Guardians invite tenders for general repairs and cleaning at the Children's Homes and for painting externally at the Boys' Home, St. Faith's-lane, and Children's Homes, Nos. 83 and 85, Pottergate-street. Specifications from Mr. B. B. Morgan, Surveyor, 1, Upper King-street, Norwich.

JULY 8.—**Nottingham.**—LIMEWASHING.—The Nottingham Education Committee invite tenders for limewashing the out-offices at the various Council and Trust Schools in the City. Particulars from Mr. A. Dale, City Architect, Guildhall, Nottingham. Deposit £1 for each of five contracts.

JULY 8.—**West Cornforth.**—ALTERATIONS.—The West Cornforth Industrial Co-operative Society, Ltd., invite tenders for alterations to the Secretary's Office. Particulars at the Central Premises, High-street, West Cornforth.

JULY 8.—**West Cornforth.**—PAINTING.—The West Cornforth Industrial Co-operative Society, Ltd., invite tenders for the painting and varnishing of the Central Premises situated in High-street, West Cornforth, the Ferryhill Branch situated in Chilton-lane, Ferryhill Station; also the Butchering Premises situated at Old Cornforth. Particulars at the Central Premises, High-street, West Cornforth.

JULY 9.—**Bradford.**—PAINTING.—The Corporation invite tenders for painting required to be done at the Market Tavern, Godwin-street. Specifications of the City Architect, Town Hall, Bradford.

JULY 17.—**Richmond.**—PAINTING.—The Board of Guardians invite tenders for painting the outside wood and ironwork of the Richmond Military Hospital. Specification of the Guardians' Architect, Mr. E. J. Partridge, F.S.I., Bank-chambers, Richmond.

★JULY 18.—**London.**—PAINTING.—The Committee of the Central Finsbury Radical Club, 326, City-road, E.C. 1, are prepared to receive tenders for painting and decorating their premises, which may be inspected between 12 and 2 o'clock, and specifications obtained from or would be forwarded by the Secretary on request.

FURNITURE, MATERIALS, etc.

JULY 9.—**London.**—WHITE LEAD.—The Commissioners of His Majesty's Works, &c., invite tenders for the supply of red and white lead during a period of six or twelve months from August 1, 1918. Forms of tender, &c., of the Controller of Supplies, H.M. Office of Works, &c., King Charles-street, Westminster, London, S.W. 1.

JULY 24.—**Sheerness.**—STONE.—The Sheerness Urban District Council invites tenders for the supply of 200 tons or thereabouts of broken stone. Forms of tender from the Surveyor and Chief Engineer, The Council House, Sheerness.

NO DATE.—**Salford.**—STORES.—The Corporation Gas Department invite tenders for the supply of general stores. Particulars of the Gas Engineer, Gas Offices, Bloom-street, Salford.

ENGINEERING, IRON AND STEEL.

JULY 10.—**Manchester.**—WIRING INSTALLATION.—The Manchester Education Committee invite tenders for providing and fixing a complete electric lighting installation at the Nansen-street Municipal School, Ashton Old-road, Ardwick, Manchester. Deposit £1 1s.

JULY 10.—**Manchester.**—HEATING.—The Manchester Education Committee invite tenders for providing and fixing a low-pressure hearing apparatus at the Nansen-street Municipal School, Ashton Old-road, Ardwick, Manchester. Deposit £1 1s.

ROAD, SANITARY, AND WATER WORKS.

JULY 8.—**Tipton.**—SEWER.—The Tipton Urban District Council invite tenders for the construction of a 9 in. stoneware pipe sewer in Hurst-lane, Tipton. Specification of Mr. W. H. Jukes, engineer and surveyor to the Council, Public Offices, Owen-street, Tipton.

JULY 12.—**Killarney.**—WATERWORKS.—The Killarney Rural District Council invite tenders for carrying out improvements at the Killorglin Waterworks. Specification of Mr. P. Carey, Clerk, Boardroom, Workhouse, Killarney.

JULY 18.—**Wakefield.**—WATERWORKS.—The Corporation invite tenders for the construction of reinforced concrete gauge basins and a small mass concrete dam, and also for the laying of about 200 lineal yards of 18 in. cast-iron pipes, in the township of Rishworth, near Halifax. Specification of Mr. C. Clemesha Smith, M.Inst.C.E., Waterworks Engineer, Town Hall, Wakefield. Deposit £1 1s.

Auction Sales.

★JULY 25.—**Bletchley.**—Messrs. Foll & Bawden will sell the stock-in-trade of Mr. W. J. Claridge, builder, decorator and plumber, including large quantity of paint and varnishes, builders' ironmongery, &c. Catalogues of the auctioneers, Bletchley and Woburn Sands, Bucks.

★JULY 30.—**London.**—Messrs. Hampton & Sons will sell the freehold residential property known as "Nether Court," Finchley, N., at the Mart, Tokenhouse-yard, E.C. Illustrated particulars and conditions of sale of the Auctioneers, 13, Cockspur-street, S.W. 1.

Sales by Tender.

★JULY 22.—**London.**—Messrs. Fuller, Horsey, Sons & Cassell invite tenders for the purchase in lots of builders' plant, at Canterbury. Particulars, with conditions of sale, may be had of the Auctioneers, 11, Billiter-square, E.C. 3.

★**London.**—The lease of Pyrimont Wharf, Wharf-road, Cubitt Town, together with goodwill and secret process of manufacture, &c., of Claridge's Patent Asphalte Co., Ltd., are to be sold by tender. For particulars apply to the Liquidator, Mr. W. O. Clough, 54, Gresham-street, E.C. 2, or to Mr. Howard Rumney, 12, Craven-street, Charing Cross, W.C. 2.

NATIONAL WASTE.

THE fourth report for the current Session of the Select Committee on National Expenditure has been issued as a Parliamentary Paper. It covers matters arising out of the administrative activities of the Admiralty, the Office of Works, the Ministry of Food, the Royal Commission on the Sugar Supply, and the Ministry of Blockade.

Dealing with the Office of Works, the Committee states that evidence was given that other Government departments had endeavoured to induce people to leave the Office of Works by offering them higher salaries. It was stated that a protest was made by the Department to the Treasury against this practice, "which should never have been attempted." Furniture, &c., supplied up to February 28, 1918, to public departments cost £308,627. It would appear that the general standard of furniture provided was unnecessarily high, considering the temporary nature of the departments concerned. For example, the type of pedestal table at a cost of £10 to £13 each can hardly be considered to have been essential.

The report proceeds:—

The cost of temporary buildings has steadily risen from about 4½d. a foot cube up to, in two cases, 11d. and 12.3d. a foot cube. One of these cases was in Whitehall-place, and the reason for the excessive cost was that it was erected on the roof of an existing house; the other case was a small building in the garden of 10, Downing-street, for the use of the Prime Minister's secretaries. The excessive cost here was caused by orders that the building was to be completed in seven days, which necessitated work being carried on night and day. It would seem that a few extra days might have been given for its completion. The comparative approximate cost of housing the staff of Government Departments in hired buildings, temporary buildings, &c., is worthy of reference, and is as follows:—Rented premises, £13 per annum per person housed; commandeered do. (other than hotels), £18 per annum per person housed; hotels, £30 per annum per person housed; temporary buildings, capital charge of £25 per person.

Seventy-five acres of grass land were ploughed up in Richmond Park and sown with oats. They produced a crop of 79 quarters, or about one quarter to the acre. The cost, including seed and allowing one-tenth cost of fencing and one-twentieth cost of reaping machine, was £744 0s. 1d., and the value of the oats and straw £247 5s., a net loss of £496 15s. No rent has, however, been charged, but allowing £1 an acre this would increase the loss to £571 15s.

In Bushey Park, 79 acres were ploughed and 270 quarters of oats produced, or about 3½ quarters to the acre; including the cost of the seed there was a net loss of £11. With rent at £1 an acre the net loss was £90. It would seem advisable not to continue these experiments.

Garngad Housing Scheme, Glasgow.

The memorial-stone has just been laid in connection with the Garngad housing scheme of the Glasgow Corporation. The scheme will provide additional housing accommodation for a population of over 400. The plans show tenement blocks of two and three stories, in red brick and rough cast. There are in all seven blocks, six of two stories and the remaining one of three stories, containing 92 houses in all, 64 being of two apartments and 28 of three apartments. The plans were prepared by Mr. Thomas Nisbet, City Engineer.

PRICES CURRENT OF MATERIALS.

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. Since our last issue several prices have been revised.—Ed.]

**** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1,000 Alongside, in River Thames.	£ s. d.
Best Stocks	2 15 0
Picked Stocks for Facings	3 15 0

Per 1000, Delivered at London Goods Stations.

	£ s. d.		£ s. d.
Flettons	2 3 0	Best Blue Pressed Staffordshire	6 10 0
Best Fareham Red	4 0 0	Do. Bullnose	6 15 0
Best Red Pressed Ruabon Facing	6 0 0	Best Stourbridge Fire bricks	9 5 0
GLAZED BRICKS—		D'ble Str'tch'rs	21 7 6
Best White, Ivory, and Salt Glazed Stretchers	15 17 6	D'ble Headers	18 7 6
Headers	15 7 6	One Side and two Ends	22 7 6
Quoins, Bullnose and 4½in. Flats	19 7 6	Two Sides and one End	23 17 6
		Splays and Squints	20 17 6

Second Quality, £1 per 1,000 less than best.
Glazed bricks priced at so much each, 50 per cent. advance on list.
Permission to be obtained from Director of Supplies for Flettons, Wire Cuts, &c.

	s. d.	
Thames Ballast	11 6	per yard, delivered
Pit Sand	14 6	
Thames Sand	15 0	" " 2 miles
Best Washed Sand	15 6	" " radius
¾ in. Shingle for Ferro-Concrete	13 6	" " Paddington.

Per ton, delivered.

	£ s. d.	£ s. d.
Best Portland Cement	3 3 0 ..	3 6 0

Do. £2 16s. 0d. alongside in 80-ton lots.
Ferrocrete 2s. 6d. per ton extra on above.
Best Ground Blue Lias Lime 2 0 0 at rly. depot.
NOTE.—The cement or lime is exclusive of the ordinary charge for sacks. The sacks are charged at 2s. 3d. each and credited at 2s. each if returned in good condition within three months.
Grey Stone Lime ..... 47s. 0d. per ton delivered.
Stourbridge Fireclay in s'cks 37s. 6d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	1 7
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	1 8½
Do. do. delivered on road waggons at Nine Elms Depot	1 9½
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L.& S.W.R., South Lambeth Station, G.W.R., and Mileage Station G.W.R., per ft. cube	2 10½
Do. do. delivered on road waggons at above stations, per ft. cube	2 11½

White basebed, 2d. per ft. cube extra.
NOTE.—½d. ft. cube extra for every foot over 20 ft. *average.*

RANDOM BLOCKS—Per Ft. Cube, delivered at Rly. Dpot.	s. d.		s. d.
Ancaster in blocks	2 10	Closeburn Red Freestone	3 0
Beer in blocks	1 9	Red & White Mansfield random block	4 8
Grinshill in blocks	2 6	Yellow Magnesian Limestone do. do	3 9
Darley Dale in blocks	2 10		

YORK STONE—*Robin Hood Quality.*

Delivered at any Goods Station London.	s. d.
Scappled random blocks ..... Per Ft. Cube	5 10
6 in. sawn two sides landings to sizes (under 30 ft. super.) ..... Per Ft. Super	4 6
6 in. rubbed two sides, ditto ..... "	4 11
3 in. sawn two sides slabs (random sizes) "	2 0
2 in. to 2½ in. sawn one side slabs (random sizes) ..... "	1 3
1½ in. to 2 in. ditto, ditto ..... "	1 1

HARD YORK—

Delivered at any Goods Station London.	
Scappled random blocks ..... Per Ft. Cube	5 5
6 in. sawn two sides landing to sizes (under 40ft. super.) ..... Per Ft. Super	4 2
6 in. rubbed two sides ditto ..... "	4 7
3 in. sawn two sides slabs (random sizes) "	1 11
2 in. self-faced random flags ..... "	0 10

TILES.

Per 1,000 f.o.r. London.

	£ s. d.
Best machine-made tiles from Broseley or Staffordshire district	3 15 0
Ditto hand-made ditto	3 17 6
Ornamental ditto	4 0 0
Hip and valley tiles (per dozen)	0 9 0

SLATES.

Per 1,000 of 1,200 f.o.r. London.

		£ s. d.
Best Blue Bangor Slates,	20 by 10	16 10 0
" "	16 by 8	8 10 0
First quality "	20 by 10	16 0 0
" "	16 by 8	8 2 6
Best Blue Portmadoc	20 by 10	16 10 0
" "	16 by 8	8 10 0
First quality "	20 by 10	15 5 0
" "	16 by 8	7 12 6

WOOD.

BEST BUILDING REDWOOD. Imported sizes.

Softwood stocks controlled by the Director of Materials, consequently prices must be withdrawn

Deals: 4 in. by 12 in., 4 in. by 11 in., 3 in. by 11 in., 4 in. by 9 in., and 2 in. by 11 in.
3 in. by 9 in., 2½ in. by 9 in., and 2 in. by 9 in.

WOOD (*Continued*).

BEST BUILDING REDWOOD.
Battens: 2 in., 2½ in., and 3 in. by 8 in.
2 in., 2½ in., and 3 in. by 7 in.
2 in., 2½ in., and 3 in. by 6 in.
Scantlings: 2 in. by 3 in., 2 in. by 3½ in., 2 in. by 4 in., 2 in. by 4½ in.
3 in. by 4 in., and 3 in. by 4½ in.
Boards: 1 in., 1½ in., and 1½ in. by 6 in. and 7 in.
¾ in.
Seconds
Sawn pitch pine logs (about 35 cu. ft. average
Do. 6 in. to 10 in.

Best Pitch Pine Deals
Under 2 in. thick

JOINERS' WOOD
White Sea First Quality Red: 4 in. by 11 in.
3 in. by 11 in., and 2 in. by 11 in.
4 in. by 9 in.
3 in. by 9 in., and 2½ in. by 9 in.
3 in. by 11 in. boards
7 in. and 8 in. battens
7 in. and 8 in. boards
Archangel White Deals—
Best 3 in. by 9 in. and 10 in. and 11 in.
Seconds, do.
U.S. Battens
Prepared Floorings and Matchings. Seconds Swedish Red and equal—
1½ in. by 6½ in. planed and shot
1¼ in. by 6½ in. planed and matched
1 in. by 6½ in. planed and shot
1 in. by 6½ in. planed and matched
¾ in. by 6½ in. planed, matched, and beaded, or V jointed
1 in. by 6½ in. do.
Columbian or Oregon Pine, best quality
Yellow Pine—First regular sizes
Oddments
Seconds, regular sizes
Oddments
Kauri Pine—Planks per ft. cube

Softwood stocks controlled by the Director of Materials, consequently prices must be withdrawn.

Dry Wainscot Oak, per ft. super, as inch	0	2	0 ..	0	2	6
¼ in. do. do.	0	1	6 ..	0	2	0
Dry Mahogany—Honduras, Tabasco, per ft. super, as inch	0	2	6 ..	0	3	0
Cuba, Mahogany	0	2	6 ..	0	3	6
Dry Walnut, American, per ft. super, as inch	0	2	0 ..	0	3	0
French, "Italian," Walnut	0	3	0 ..	0	5	0
Teak, per load (Rangoon or Moulmein)	60	0	0	85	0	0
Do. do. (Java)						
American Whitewood planks, per ft. cube	1	4	0 ..	1	10	0
Glue, per cwt.	10	0	0 to	10	15	0

METALS.

JOISTS, GIRDERS, &c.

Prices controlled by the Ministry of Munitions.

Rolled Steel Joists, ordinary sections, basis price
Plain Compound Girders, ordinary sections
Plain Compound Stanchions
Angles, Tees, and Channels, ordinary sections
Flitch Plates
Cast Iron Columns and Stanchions, plain ordinary patterns

WROUGHT-IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £4 net value delivered direct from works. 5 per cent. less carriage forward if sent from London stocks.)

	Sizes up to and including 2 in. Tubes.	Fittings.	Sizes 2½ in. to 6 in. Tubes.	Fittings.
Gas	31½	35	36½	37½
Water	26½	32½	31½	35
Steam	21½	30	26½	32½
Galvanised Gas	8½	27½	12½	30
" Water	—	25	3½	27½
" Steam	6½ *on*	22½	2½ *on*	25

L.C.C. COATED SOIL PIPES—London Prices ex works.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles s. d.
2 in. per yd. in 6 fts.	3 10 ..	2 10 ..	3 5
2½ in. " ..	4 5 ..	3 2 ..	4 3
3 in. " ..	5 5 ..	3 5 ..	5 1
3½ in. " ..	6 0 ..	4 3 ..	6 0
4 in. " ..	6 7 ..	4 10 ..	6 9

RAIN-WATER PIPES, &c.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles s. d.
2 in. per yd. in 6fts. plain	2 7 ..	1 7 ..	2 2
2½ in. " " ..	2 10 ..	1 10 ..	2 7
3 in. " " ..	3 5 ..	2 4 ..	3 5
3½ in. " " ..	4 1 ..	2 9 ..	4 0
4 in. " " ..	4 6 ..	3 3 ..	4 10

L.C.C. DRAIN PIPES,—9 ft. lengths. London Prices. 4 in., 7s. 0d. .. 5 in., 8s. 6d. .. 6 in., 10s. 0d.

	Per ton in London. £ s. d.	£ s. d.
IRON—		
Common Bars	16 10 0 to	17 0 0
Staffordshire Crown Bars—good merchant quality	16 10 0 ..	17 10 0
Staffordshire "Marked Bars"	18 0 0 ..	19 0 0
Mild Steel Bars	21 0 0 ..	21 10 0

METALS (*Continued*).

	Per ton in London. £ s. d.	£ s. d.
Steel Bars, Ferro-Concrete quality, basis price	19 10 0 ..	20 0 0
Hoop Iron, basis price	20 10 0 ..	21 10 0
" " Galvanised	33 0 0 ..	—
Sheet Iron Black—		
Ordinary sizes to 20 g.	23 0 0 ..	23 10 0
" " 24 g.	24 0 0 ..	24 10 0
" " 26 g.	25 0 0 ..	26 0 0
Sheet Iron, Galvanised flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	34 0 0 ..	—
Ordinary sizes to 22 g. and 24 g.	34 0 0 ..	34 10 0
Ordinary sizes to 26 g.	36 0 0 ..	36 10 0
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	35 10 0 ..	—
" " 22 g. and 24 g.	36 0 0 ..	—
Ordinary sizes to 26 g.	39 0 0 ..	—
Galvanised Corrugated Sheets—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	33 0 0 ..	Nominal prices only.
Ordinary sizes, 22 g. and 24 g.	33 10 0 ..	
Ordinary sizes, 26 g.	32 10 0 ..	
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	24 10 0 ..	—
Best Soft Steel Sheets, 20 g. and 24 g.	24 15 0 ..	—
Best Soft Steel Sheets, 26 g.	26 10 0 ..	—
Cut Nails, 3 in. to 6 in.	29 0 0 ..	30 0 0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Delivered in London. £ s. d.	
LEAD—Sheet, English, 4 lb. and up	38 10 0 ..	—
Pipe in coils	39 0 0 ..	—
Soil Pipe	42 0 0 ..	—
Compo pipe	43 0 0 ..	—

NOTE—Country delivery, 20s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra. Orders for over 1 cwt. Sheet Lead or Pipe, or 28 lbs. Solder should be accompanied by a certificate or licence, which can be obtained from the Director of Materials [A.N.2 (E)], Hotel Victoria, S.W. Smaller quantities than the above can be obtained by making a written declaration to the Manufacturer or Merchant that the metal is wanted for urgent renewals or repairs, and giving the name of the job for which it is required.

COPPER—			
Strong Sheet	per lb.	0 2 3	Class A certificate required for all Copper, Tin and Solder purchases.
Thin "	"	0 2 4	
Copper nails	"	0 2 3	
Copper wire	"	0 2 4	
TIN—English Ingots	"	0 3 6	
SOLDER—Plumbers'	"	0 1 6	
Tinmen's	"	0 2 0	
Blowpipe	"	0 2 1	

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

Per Ft.		Per Ft.	
15 oz. fourths	7d.	32 oz. fourths	10d.
" thirds	7½d.	" thirds	11d.
21 " fourths	8d.	Fluted, Obscured and Enamelled Sheet,	
" thirds	8½d.		
26 " fourths	9d.	15 oz.	7½d.
" thirds	9½d.	21 "	8½d.

Extra price according to size and substance for squares cut from stock, and only small quantities can be supplied without an A Certificate.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
⅛ Rolled plate	5d.
¼ Rough rolled and rough cast plate	5½d.
½ Rough rolled and rough cast plate	6d.
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	6½d.
Ditto, tinted	7½d.
Rolled Sheet	6d.
White Rolled Cathedral	6d.
Tinted do.	6½d.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil	in pipes per gallon	0 8 0
" " "	in barrels "	0 8 4
" " "	in drums "	0 8 7
Boiled " "	in barrels "	0 8 7
" " "	in drums "	0 9 0

Orders for these oils must be accompanied by a certificate from the Ministry of Food (Oil and Fat Department), St. Stephen's House, Westminster, S.W.1.

Turpentine in barrels	"	0 11 3
" in drums	"	0 11 6
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		55 10 0

GENUINE WHITE LEAD PAINT—
"Blackfriars," "Nine Elms," "Park," and other best brands (in 14 lb. tins) not less than 5 cwt. lots per ton delivered 78 10 0
Red Lead, Dry (packages extra) .. per ton 42 0 0
Orders for White and Red Lead and any Paint containing Lead must be accompanied by a certificate or licence, which can be obtained from the Director of Materials [A.N. 2 (E.)], Hotel Victoria, S.W.

Best Linseed Oil Putty	per cwt.	1 2 0
Filocol	per cwt.	0 15 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak	0 12 0
Pale Copal Oak	0 14 0
Superfine Pale Elastic Oak	0 16 0
Fine Extra Hard Church Oak	0 14 0
Superfine Hard-drying Oak, for seats of Churches	0 18 0
Fine Elastic Carriage	0 18 0
Superfine Pale Elastic Carriage	0 18 0
Fine Pale Maple	0 14 0
Finest Pale Durable Copal	1 0 6
Extra Pale French Oil	1 4 0
Eggshell Flatting	1 0 0
White Pale Enamel	1 6 0
Extra Pale Paper	0 16 0
Best Japan Gold Size	0 12 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 12 0
Brunswick Black	0 10 0
Berlin Black	0 16 0
Knotting	1 10 0
French and Brush Polish	1 0 0

CONCRETE SHIPS

In the course of a letter which we have received from Mr. J. H. Kerner-Greenwood, of King's Lynn, the writer, in referring to concrete ships, says :—

The publication of the paper which was recently read at the Concrete Institute on this subject will possibly give still further assistance to the country—maybe, some genius will come along with a strong, tough, elastic concrete such as we have never contemplated.

What would the spirit of Macadam say if he could be shown a modern dustless road, as necessitated by the advent of the motor; and is it not possible that a similar chemical agency (say with bitumen) might produce the resilient concrete so urgently required for ship-building. The general opinion evolved during the discussion at the Concrete Institute was against renderings and washes, and that the concrete itself should be made waterproof.

It was explained that washes of all kinds are only "skin deep," and would quickly wear off by the friction of the water—that any efflorescence would also force off a film such as a wash produces. Few would disagree with these objections. To prevent "fouling," which increases the resistance of the water, there were several suggestions for giving the concrete a smooth face. One speaker thought that the concrete face should be ground down after the removal of the forms. This would necessitate great care in grading and mixing the concrete, and the use of a cement waterproofer to eliminate voids and prevent the presence of orifices. In an article recently published in a Norwegian journal, a Mr. A. A. Boon states that the concrete should be polished, not only to prevent fouling, but because it guards the steel reinforcement against rust. He found that the ships which he had polished prevented the formation of minute cracks on the surface, through which the water would otherwise enter and rust the reinforcement.

For some years terrazzo workers have used my product for obtaining a polish on cement surfaces, for they find it is the only method which will withstand the acid-laden air of large towns. Experiments are being made in several countries with Pudloed concrete, with the dual purpose of waterproofing and polishing the exterior hulls of concrete ships. So far, I am allowed to say that the lubricating action of the powder which is given to the aggregate when mixing the concrete, surprisingly eliminates the voids, as previously proved by several experiments made at the engineering school of Cork University a few years ago.

I shall be glad to send any reader of your widely-read journal the "Book of Tests," containing tension, compression, and percolation tests made by such world-famous experts as Faija and Kirkaldy.

THE STONE PRESERVN. CO. LTD.
Restorers and Preservers of
Modern and Historical Buildings,
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PATENTS.

APPLICATIONS PUBLISHED.*

106,997.—Asbestos Protected Metal Co.: Protected metal article for building purposes, such as a sheet, bar, or like article, and process for making the same.

115,545.—G. Notarianni: Safety device for mines, tunnels and quarries, for use in blasting.

115,549.—L. E. Hird: Devices for controlling the fuel consumption in domestic and other fire-places.

115,554.—E. L. Bates: Puttyless glazing bars.

115,581.—T. Furniss: Roofing slab.

115,584.—H. C. Foster: Hooks for cranes, derricks, and the like.

115,601.—W. C. Johnson: Fencing.

115,609.—P. H. H. Jantzen: Air filtering or washing apparatus.

115,688.—C. V. Brindley: Manufacture of hollow steel and iron bars or tubes.

115,695.—W. J. Stewart and J. Woolcock: Ferro-concrete construction applicable to the walls of ships and other structures.

115,702.—De Bergue & Co. and R. Shaw: Apparatus for punching or drilling holes in metal plates, bars, or other rolled sections.

115,744.—F. H. Griffiths: Manufacture of headed bolt, rivet, or the like.

115,751.—H. J. Hedderwick.—Devices for preventing nuts from turning on screw-bolts and the like.

115,760.—E. D. Halstead and J. Worthington: Means for locking or fastening windows, sliding shutters, and such like.

115,791.—J. Rae and Watford Manufacturing Co.: Collapsible crates or cases.

115,864.—J. Shanks: Water closets.

115,879.—D. B. Campbell and D. T. Cameron: Wood-sawing machines.

* All these Applications are now in the stage in which opposition to the grant of Patents upon them may be made.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 12 noon on Wednesday.*

* Denotes *accepted.* † Denotes *provisionally accepted.* ‡ Denotes *recommended for acceptance.*

CARNARVON.—For erection of lairage at slaughter-house for the Corporation :—
*W. A. Roberts & Roberts £59 10

SALFORD.—For limewashing, &c., at schools, for the Corporation :—
*W. Walton, Pendleton £106 15

SALFORD.—For supply of concrete flags required by the Highways Committee of the Corporation :—
*H. Heys & Co., Stacksteads £385

SALFORD.—For supply of (*a*) 4,600 yards of 6 in. glazed stoneware pipes, and (*b*) 18,400 hard-burned glazed stoneware tiles :—
*Albion Clay Co., Woodville—(*a*) £747 10s.; and (*b*) £94 15s.

TERMS OF SUBSCRIPTION.

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Reserve Funds - £4,078,996
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EMPLOYERS' LIABILITY.
MARINE.
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Asphalte.—The Seyssel and Metallic Lava Asphalte Co. (Mr. G. F. Glenn), Office, Moorgate Station Chambers, Moorfields, E.C. 2—The best and cheapest materials for dampcourses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to Forth Bridge Co.

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ARE BRANDED "SUN" BRAND.

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